THE

Eclectic Review.

DECEMBER, 1855.

ART. I.—*The Life of Giovanni Angelico da Fiesoli.* Translated from the Italian of Vasari by Giovanni Aubrey Bezzi. With Notes and Illustrations. Printed for the Arundel Society. 1850.

2. *Giotto and his Works in Padua; being an Explanatory Notice of the Series of Woodcuts executed for the Arundel Society after the Frescoes of the Arena Chapel.* By John Ruskin. Printed for the Arundel Society. Parts I. and II. 1854.

THE above publications are issued by the Arundel Society, which was expressly established for promoting the knowledge of Art. It was thought that the general and increasing interest felt for art in this country stood in need of education and guidance, and that its high study might well be promoted by the publication of engravings from some of the great Italian painters, and by translating and editing the abundant materials existing in foreign treatises and documents. In pursuance of this object, the Society has published the above works, and likewise issued careful and characteristic engravings from some of the more valued frescoes by Giotto and Fra Angelico. It has thus done good service to the cause of art in bringing into increased notice the period of the Italian Pre-Raphaelites. Of this early epoch, we now propose to treat: we shall endeavour to estimate the peculiar merits of these ancient works; to show their historical relation with the great masters of the fifteenth century, and, coming down to our own times, to judge of the paintings and teachings of men who are known among us as the modern Pre-Raphaelites.

We will at once confess that the stiff rigidities of mediæval

art have long ceased to be wholly repulsive to our tastes; we can now see in the early Italian works redeeming qualities which offer for these defects, at least, a partial recompense. The time was, indeed, when we found it most difficult to comply with the injunction of Goldsmith by praising the works of Pietro Perugino. These early Italian masters came to us in such quaint and questionable garb and demeanour as to excite rather ridicule at their oddities than admiration for their merits. This was natural and inevitable. In literature, as well as in art, what is strange or ridiculous first strikes the eye; while unobtrusive beauty and excellence lie hid beneath the disguise of a repelling exterior. If we look into Chaucer and Spenser, we are probably first struck by their quaintness; and on opening George Herbert are repelled by his conceits ere we are won by his beauties. The friends, too, we value most have possibly, by exterior eccentricity, excited a smile before they called forth our sympathy. So likewise is it with ancient times. If the life of any of us could be thrown back into the actual world of the thirteenth and fourteenth centuries—into the streets of its cities, or the cloisters of its convents—we should be repelled by a mode of thought and life to our modern tastes most foreign, ere we could appreciate the saving beauty and excellence which, dwelling beneath the outer garb, constitute the true and vital essence of the age. Thus, also, it is with mediæval art. The first distaste for its quaintness, rigidities, and too painful and apparent defects, must be forgotten and overcome ere we can be brought to acknowledge the life it breathes, the sterling merits of a character beautiful in its simplicity and steadfast in its truth. It would thus appear that the admiration and appreciation of mediæval art is a gradual growth, and in some sense an acquired taste; that prejudices and counter-feelings must first die out, and that then may come a heartfelt appreciation for the earnest truths and simple beauties of these early works. We fear, however, that with many minds there succeeds a still subsequent phase in which judgment becomes blinded, and the worship due alone to the manifestation of genius is unconsciously transferred to incapacity and ignorance. Of this ultimate stage of prejudice, not less fatal or deplorable than the first, we shall treat in the sequel. At the present moment, our purpose is to examine into the real merits, not to expose and dispel the fancied virtues of these early men. We will now speak of that which we know.

We cannot refer to our study and experience of the early Italian masters without some emotion. The hours and days passed in the galleries and churches of Italy, tracing the growth and final decay of art, have been among the most delightful and profitable which life records. We made a pilgrimage to Assisi, the city of

St. Francis, to examine the works of Giotto in its painted church. In Sienna, we traced an early, pure, and specially spiritual art to its first origin. In the Campo Santo at Pisa, we have attentively examined Orcagna's frescoes of 'The Triumph of Death,' and 'The Last Judgment,' and found therein united with the inability incident to infant art a reverent conception of holy things. In the churches and galleries of Florence we have traced early art from its infancy to maturity. The Church of Ste. Croce in that city contains a series of frescoes, which, in the history of art, are of great interest and importance. Those by Giotto are specially worthy of notice. The female heads are of the noble, pure, and spiritual type common to these early times; the male figures, more decided in character, and somewhat quaint and constrained, are, however, remarkable for that truthful, heartfelt, and thoughtful expression, which gives to these masters and times their chief interest and value. In our notes on this series occurs the following passage:—'We are more and more convinced that these early men worked in a spirit of reverence and deep feeling, which in later times was in a great measure lost; it is true that they do not possess those merits which can only be found in an art fully developed; but the want is less felt because we prize their works for those high qualities of thought, purity, and emotion, which a knowledge of mere technical art can never confer.' The Church of Ste. Maria Novella is rich in a series of frescoes from the more matured and facile hand of Ghirlandajo. Freed from the bald austerities of his predecessors, art here indulges in the luxuries of gold brocades and rich costly draperies. He conceives of a noble race of beings, enjoying the full and balanced powers of mind and body, in which neither tyrannises over the functions of the other, but each exerts within its separate sphere its rightful dominion. The care and thought-worn countenances, while duly elevated above the commonplace realities of actual life, are no mere dreamy abstractions lost in contemplation. The spirit of heaven and of earth are here blended, and the healthful enjoyment of this world is made compatible with the aspirations for the next. We find in our note-book the following entry on these works:—'We are impressed with the fancy that these early men always painted good people. Subsequent artists painted pretentious people, well-dressed poeple, empty people, created not by God, but by the dressmaker and dancing-master. But in these old times they painted men and women of high attributes, solemn, of deep thought and earnest purpose, knowing and feeling their responsibilities, and impressed by the truths and realities, not carried away by the vain shadows around them. Hence in these days flourished an art humbly tending to the glory of God and to the honour of his creatures, by rendering

them Godlike; while, on the other hand, 'subsequent times often degenerated into mere picture manufacture, wanting the soul and high purpose of earlier art.' We need scarcely say more. We will not insist upon the merits of well-known figures by Masaccio which became studies and examples for subsequent masters; we need not enlarge on the purity and heavenly beatitude of Fra Angelico; of his countenances rapt in beatific vision, of beings purified and bodies glorified, walking in angelic converse the gardens of paradise, gathering the flowers which blossom in the fields of heaven. We will not now enlarge further upon these things, of which the public may ere this be well nigh satiated; we have already sufficiently, strongly, and fully expressed our opinion on the unrivalled though partial merits of these early masters, and it will therefore be the more readily conceded that no blind insensibility or predetermined prejudice has dictated the remarks which may follow upon the revival of this early Italian period in our modern English school.

In studying art through its past history, nothing is more strikingly manifest than the diversified and almost incompatible characteristics which enter into and distinguish its different schools. If man himself were not equally diversified in character, if life and general history were not examples of contrasts as well as of analogies, if man is demon not less than angel, now holding communion with heaven, now grovelling on earth, it might be more difficult to explain and reconcile the works which he has left recording his passions or manifesting his aspirations. The entire philosophy of man can never be deduced by a partial and one-sided review of his manifestations. The philosophy of art, as of all other mental developments, must embrace all known examples: the basis on which it builds cannot be too wide or extended. We therefore rejoice that writers and artists have come forward to rescue from neglect early works of which we have already spoken in the highest terms. Such pictures teach a lesson specially needed in the art of our country, and lead to a reaction which, if it swerve not too greatly from the line of moderation, cannot fail of being salutary. We had previously been too exclusively under the sway of the Carracci school at Bologna. Sir Joshua Reynolds, in his 'Discourses,' states, that art students would do well to allot a much greater portion of their time to the city of Bologna than it has been hitherto their custom to bestow. He also tells us that, in his opinion, Ludovico Carracci has, of all other painters, the greatest power over the means by which conceptions and sentiments are pictorially expressed—that in unaffected breadth of light and shadow, in simplicity of colour, in the solemn twilight which is diffused over his pictures, corresponding so well with the gravity and dignity

of his subjects, this painter approaches, of all others, the most nearly to perfection. Now, from a school, for the most part of such fatal facility and conventional mediocrity, vainly seeking to hide its inherent want of vitality under the pretence of adopting all existing excellence, any reaction must be a change for the better. Still it would argue narrow-minded blindness to adopt any one master or epoch, whether it be the mediæval at Florence, or the eclectic at Bologna, for exclusive commendation and imitation. Doubtless, each man, according to the pointing of his genius, will necessarily feel greater sympathy for one style or school, than for its opposite. Etty revelled in Venice, others find the earlier masters, or even the Dutch painters, most congenial to the idiosyncrasy of their tastes; but it is evidently the part of wisdom to enlarge to the uttermost the sphere of vision, and to merge special individual sympathies into the oneness of a completed and catholic system. It is only when the entire cycle of art shall be described that the varied genius of man will obtain adequate expression. No true poet can be blotted out of the hemisphere of literature, no artist out of the scroll of art-history, without leaving a void in the consecutive but still incomplete genealogy of genius. In these days, every legitimate art-manifestation must grow out of the consummated history of art's past development. Each separate school can teach something. The artist who would enlarge the individuality of a partial genius into universality must study not one school or master, but many. It is true that his special sympathies may rightly lead to the selection of a special master or epoch; he may thus make one special art-manifestation his primary aim; but unless he be content to sink into a narrow mannerist, he must bring to bear upon the central idea of his life and labours, all collateral lights, aids, and agencies. The artist must look to universal nature if he would correct and enlarge the individual bias of partial genius; and in like manner he must study art's universal history, not in order to listen in egotistic delight to the echo of his own thoughts and words, but to catch the utterance of that varied and pervading genius, which, refusing to reveal its full mystery to any one man or epoch, completes the entire art revelation in art's consummated history. Thus, by a law of development in this art-creation, each manifestation leads to its succeeding phase by links which ought never to be forgotten or dissolved. Each school and master is but a portion of a greater whole, from which no part can be taken without marring the symmetry of the entire structure. We may know that the Venetian school is less thoughtful than the Roman, but is it, therefore, to be excluded from our art-studies and philosophy? The Roman, in turn, might, in like manner, be cast aside because

it cannot boast of the colour of the Venetian. Admitting, therefore, that these early Italian masters attained a purity, an earnestness, and spirituality surpassing all other periods, is it reasonable, is it wise, to ignore schools which are as undoubtedly supreme in other, and by no means despicable qualities? We dissent, therefore, from the creed of these Pre-Raphaelite Brethren, not because they worship what is unworthy of reverence, but because, in their too ardent and exclusive admiration for one circumscribed period, they ignore the full cycle of art's history and development.

This pretended art revival has originated in and been sustained by collateral causes, which we now proceed to enumerate and examine. A love of paradox, the craving for some startling eccentricity, the mental excitement involved in throwing aside old and unaccustomed guides for new, have, with some minds, a delusive fascination. Again, while there are men who are impelled by ambition and discontent, to launch into a fancy-created future, there are others who seek an escape from the present by turning their steps backwards to the past. In ecclesiastical matters, their sympathy is with whatever Church can boast of remotest origin; in literature, they love old books, or new books in old bindings; and in art, in like manner, they prefer old prints, old coins, old pictures, or new pictures in the oldest manner. Now, far be it from us wholly to discourage this harmless dilettantism incident to refined and accomplished minds. We confess that we feel towards it a greater sympathy than for that confident and too complacent reliance on present unaided resources and capabilities, which looks upon the past only for self-congratulation on its own superior attainments. But still this indiscriminate worship of the old merely because it is old, implies a blindness and weakness subversive of a rational and natural taste in art. This is the first cause we would assign for the present resuscitation of art-antiquity. It is thus evident that this art-phenomenon is only one form of a wider manifestation, having its origin in a tendency latent in humanity.

Another reason is to be found in the delight felt by connoisseurship in discovering merits unappreciable by the uninitiated multitude. To find and bring into notice neglected genius is a favourite resource with minds which can shine only by borrowed light. To call the oft-repeated, however intrinsically excellent, conventional and commonplace, and to reserve for peculiar worship what is distant, foreign, and necessarily beyond the sympathies of the multitude, doubtless may be presumed to argue a refined and discriminative taste. There is likewise an inherent tendency in each fashion in succession to wear itself out; and the conventional style of art, long established in England, having become, through endless repetition, hackneyed

and commonplace, it was but consonant with the known oscillation which governs human affairs, that a reactionary movement should set in. The reaction is, of course, in an opposite direction to the antecedent tendency. Art critics having formerly placed the epoch of perfection a little too far onwards, it would now seem but a necessary reaction to remove art's culmination to a period somewhat too far back. Hence this resuscitation of an early art-period. We thus see that this modern revival is but one of those reactionary and vacillating movements that constitute the zig-zag career of human progression, which, by an inherent law of exaggeration, thus swerves from the right line of its destiny.

We can assign one more cause for this reversion to mediæval art. In art there has been waged an ever-recurring conflict between the classical and Christian elements. Cimabue, Giotto, Ghiberti, and Masaccio, were essentially Christian in spirit, striving after not so much a bodily beauty and perfection as for the expression of a spiritual state of experience—the pure and elevated manifestation of the Christian character. The change which undoubtedly came over the spirit of art, under the influence of the Medici, both in Rome and Florence, is usually ascribed to the study of the antique. That this change was an advanced movement; that the masterpieces of the classic period supplied manifest defects in then undeveloped Christian art; that it was desirable and necessary that the arts should pass through this phase on their onward career, we cannot for one moment doubt. We are ready, however, to join Mr. Ruskin and the Brethren, at least in a partial condemnation of the movement. The advantage gained was purchased, undoubtedly, at the expense of something lost. The æsthetic beauty of the classic remains was not the sole actuating principle in this onward movement. At the Vatican infidelity was enthroned; Christendom at its source was in spirit unchristianized; and classic literature, classic art and tastes revived amidst the expiring faith in the pure life and essence of Christianity. Our knowledge of Raphael's later period, however, does not justify the imputation that this spirit of Antichrist sullied and infected the pure character of his works. Still it must be admitted that a classic revival had set in for evil as well as for good, and that synchronous with the movement, the fervent spirituality of early Christian art was on the wane. An analogous and parallel coincidence occurs in the art epoch of the French Revolution. Christianity is overthrown, and with the rise of infidelity classic art is once more ascendant. David and his followers moulded figures on canvas cold as the antique marbles which were the models, sceptical and faithless as the age out of which these creations sprang, inspired by the convulsive paroxysm of revolu-

tion in lieu of the quiet sustaining spirit which once breathed in Christian art. This country, likewise, has passed through a classic epoch, and is now possibly in the perihelion of the ecclesiastical orbit. Classic and its derivative Italian architecture was long exclusively the style not merely for palaces but for churches; and now, on the contrary, Gothic is equally imperative, not only for churches but for the palaces of secular legislation. This ecclesiastical and Christian revival is so clearly marked and widely diffused that it is scarcely needful to insist further on the fact. It is seen in the increased vitality of the Church, and its spirit is equally extended and diffused over our literature and our arts. The writings of the Fathers have been rescued from neglect, and with them, not unnaturally, the pictures of the middle ages. The modern Pre-Raphaelite school, therefore, has its rise in a still wider manifestation, and appeals, even in its anachronisms and eccentricities, to present existing tendencies and sympathies. The teaching of the Brethren is consonant with their practice, and accordant with the movement of which we speak. They tell us in a periodical entitled 'Art and Poetry,' that the art of the Greeks was not spiritual; that 'their gods speak to us no longer as gods;' 'they have become mere images of stone and profane embodiments;' that 'Hellenic art wants everything which Christian art is full of;' that 'Ithuriel's golden spear was not more antagonistic to Satan's loathly transformation, than is Christian opposed to pagan art.' Now, that one form of beauty is essentially antagonistic to any other of its genuine manifestations, cannot for one moment be admitted. We make this quotation merely to exemplify the conflict which from time to time has been waged, and is now again renewed, between classic and Christian art. This mistaken, because exclusive sympathy for the ecclesiastical element, will likewise explain the otherwise somewhat anomalous advocacy of Mr. Ruskin. A man who can seriously tell his auditors in Edinburgh that iron architecture is not to be tolerated, because he finds no sanction for its use in the Bible, and because, thereby, the force of the Scripture image of the Corner Stone would be lost—who can seriously recommend the people of Edinburgh, in default of Gothic edifices, to annex at least a Gothic porch or Pointed window to their classic houses, is evidently so far the victim of enthusiasm, as ceasing to be a guide, to serve only as an extreme example. We know, with the certainty of an *à priori* argument, that through innate antipathies such a man, so committed, must necessarily condemn classic art as he abjures the pagan faith. We can no longer be astonished, when he denounces our modern English art, on the assumption, however false, of its denying Christ; and on the other hand, it is but natural that

his hopes and sympathies should centre around mediæval art and its present revival, inasmuch as by a parallel assumption it alone is found to 'confess Christ.' That this is sound catholic or healthful criticism, we deny; but its refutation is not now our object. We confine ourselves to the statement of its antecedents; the premises being given, the conclusion, however startling, is thus easily understood. Having, therefore, in the first place, not only admitted but endeavoured to enforce the merits by which mediæval art and its recent revival rightly claim our attention and discriminative admiration, we have now enumerated certain accessory and incidental reasons that have given to the movement an additional and fictitious importance.

We will further attempt to show that this modern school not only implies partial and exaggerated truth, but involves likewise positive error. It does not content itself with the simple assertion, that the earlier Italian masters attained to certain special and exclusive excellences. To this position, we have already given our assent. But it further maintains that these early men are better guides and truer artists than either Raphael, Michael Angelo, or Leonardo da Vinci. This we utterly deny, and will now advance our reasons. To prevent mistake, we at once state that we are not the champions of the Post-Raphaelite masters. We are not the devoted admirers of Guido's refined ideals, of Annibal Carracci's, or Nicholas Poussin's classical compilations, and we shall not now stop to insist on the paramount merits of Correggio, Titian, Veronese, or Tintoretto, in their several departments. We confine ourselves to the simple position, that art did not culminate with the Pre-Raphaelite painters; that the meridian of its power was not attained till Leonardo, Michael Angelo, and Raphael reached their zenith. On what ground have these great names been cast down from the eminence to which the suffrages of all times and countries have rightly raised them? Is the career of Leonardo, and the history of his greatest work, calculated to impair confidence and respect. 'The Last Supper' is said to be a compendium of all his studies and writings; we are told by Vasari, that to the heads of the apostles he gave so much beauty and majesty, that he was constrained to leave that of the Saviour unfinished, because he could not hope to find on earth, and he had not yet attained the power of presenting it to himself in imagination, that perfection of beauty and celestial grace requisite for the due representation of Divinity incarnate. The head of Judas was also still wanting. He did not think it possible to imagine the fitting features of a man, who, after so many benefits received, possessed a heart sufficiently depraved to betray his Lord. Throughout the work every feature is a study; each head the exponent of a well-marked and fully elaborated

character; but we need not dwell on the merits of a painting happily so well known. If any one wishes to mark the wide gulf which lies between early Italian art and its subsequent maturity, let him contrast this work with the engravings from Giotto's Chapel at Padua, now in course of publication by the Arundel Society. We recently made a special visit to Padua for the purpose of examining these pictures, and after spending several hours in their study, could well comprehend why Giotto was deemed a man of genius. Such a man would have been great in any art-epoch—indeed would himself have constituted an epoch. The pictures in this chapel possess the merits which we have already pointed out as characteristic of early Italian art, yet we think it would be manifestly absurd to place them on an equality, or even to compare them with Leonardo's 'Last Supper,' Michael Angelo's Sibyls and Prophets, or Raphael's 'Transfiguration' and 'School of Athens.' We would not for a moment do Giotto the injustice of putting him to this test. We do not pretend to decide which of these men inherently possessed the greatest genius. Raphael, had he lived in the days of Giotto, might not have proved the greater man; but we are exclusively now concerned with the comparative merits of their respective works, about which we conceive there cannot be the shadow of a doubt. Giotto and Leonardo have each painted the 'Last Supper;' the work of the one is stereotyped in the memory of every educated man throughout the world; would the other be wholly unknown, had it equal merits?

The truth can never be too often enforced, that art is a development, not in each separate mind a fresh creation out of nothing; men of undoubted genius, consequently, who come later in the world's history, rich in inheritance, advance art to increased maturity. The laws of perspective were unknown to Giotto, Cimabue, and their immediate followers; however high and noble their thoughts, they struggled, in some measure necessarily in vain for utterance, because the language and grammar of art were not yet established and matured. In like manner neither the art of foreshortening, nor the science of anatomy, was known or studied by the Pre-Raphaelite artists, and consequently they were incapable of representing the human form either with truth or varied power of expression. A monk in a convent may, through prayer and fasting, attain in his art to a heavenly purity, but if painting be indeed heavenborn, it at least demands a fitting earthly habitation. Even poetry, which approaches more nearly to a disembodied spirit, cannot be wholly unmindful of outward form and comeliness; and in painting, at least it is manifest that purity and elevation of intention will not alone suffice, without power and knowledge to give to thought efficient

expression. Mere poetical conceptions must be distinguished from pictorial powers. The Chinese, the ancient Egyptians, and the former inhabitants of Central America, may possibly each have been endowed with high poetic conceptions; but they were all manifestly wanting in the graphic power to give to their thoughts outward expression. The early Italian painters, likewise, may have been men of transcendent genius, with whom the pure essence of poetry was struggling for manifestation; yet without the knowledge of perspective, composition, anatomy, and even the grammar and first elements of art, how could they give to their thoughts adequate pictorial utterance? It is truly a study of no slight interest to mark how these simple, earnest, and truthful men struggled, according to the measure of their light, which shone in so much darkness, to express the deep heartfelt thoughts and emotions with which their minds and lives were burdened. We may learn from such a study much that is valuable to ourselves, more perhaps from the spirit of their minds, exemplified through their works, than from the intrinsic merits of the works themselves. Their conscientious truthful endeavours, their loving painstaking labour, their childlike simplicity, their want of art, so to say, artlessness, their faltering timidity,—even their very ignorance and blunders, cannot fail to endear these early artists to all who have sympathetically studied their childlike works. Still we again assert, that these men were but children groping in the dark, and many of their works are interesting and historically important, only because they lead up by a natural sequence to art's true consummation.

We have often, likewise, in looking with admiration on the purity and heavenly resignation pervading these early painters, been convinced that the type of countenance they chiefly loved is of all others the most easily represented. It may sound an anomaly, but it is nevertheless an undoubted truth, that those states of mind which are most difficult to attain unto, are the most easy of pictorial representation. That perfect peace which the world cannot give, the heavenly resignation, and prayerful reliance on a superior power and guidance—the latest, as it is the highest of all spiritual attainments,—presents comparatively few difficulties for pictorial embodiment. In early Italian art this type of features is found in endless repetition: the secret by which the expression was to be produced being once discovered, the same combination of features with the same identical expression became traditional from master to pupil, and was at length indefinitely multiplied by rote, without awakening or demanding in the artist any corresponding thought or emotion. Heavenly states of mind are the most difficult of attainment, but earthly passions the most difficult of pictorial representation. In the

one, the features and frame are in convulsive action and transitory and rapid movement; in the other, they are in fixed repose, and therefore more easily transcribed. The one demands a knowledge of the anatomy of expression, with a ready and certain facility of drawing; the other may be attained even in the early history of undeveloped art, without science or artistic knowledge. As examples, we may adduce the picture of 'The Last Judgment,' as treated by Orcagna and Fra Angelico. The angelic loveliness and purity of the heavenly choir, the unbroken and perfect holiness of the blessed, softly treading the flowery paths or walking in happy bands among the shady bowers of Paradise, are most fittingly represented by an art guiltless of all earthly knowledge, in which the forms seem too frail and inarticulate for worldly conflict. But when we turn to the anguish, despair, and agony of the lost, these early men fail, from lack of power and knowledge, and they fall into the grotesque and distorted, because incapable of the natural. Again, does early art afford us even one example at all comparable to Leonardo's cartoon of 'The Battle of the Standard,' Michael Angelo's equally celebrated cartoon of 'Soldiers Bathing in the Arno,' or Raphael's fresco of 'Heliodorus' in the Vatican? These works do not consist of solemn saints standing rigidly upright, but contain figures in motion and action, demanding a knowledge of drawing and anatomy wholly beyond the scope and capacity of early Italian art.

It would appear, then, that the simplicity and heavenly purity which we cannot but admire in these early men, resulted as much in the want of worldly knowledge, as from the affluence of spiritual gifts. There is the simplicity of the child consequent on his ignorance; and there is likewise the simplicity of the full-grown man, whose purity of spirit the world has failed to sully. The simplicity of the early Italian masters is that of the child, whose childlike ways win our sympathies, whose first efforts excite our interest, not so much from their intrinsic merit as evidence of the mind's earliest workings, as manifestations of a mental state which is at least the promise of a higher excellence. But this simplicity of the child, and of the early painter, is not to be compared and confounded with that ultimate simplicity, the mind's highest and most mature attainment, when it casts aside the world as worthless, when in the full maturity of its strength and the rich accumulation of its knowledge, it feels the vanity of vanities, and retires into the repose of its highest nature, finding enduring satisfaction in that essential truth, beauty, and goodness, which is alone true simplicity. The last state of that man is better than the first. The simplicity of that character, or of that art, which results from matured strength rightly governed,

from consummated knowledge fitly applied, is the ultimate attainment and perfection, of which the simplicity of the child and of early art is but the prelude and the promise. We trust that we have now adduced sufficient evidence to prove that art did not attain its climax till that great period which could boast of Leonardo, Raphael, Michael Angelo, as living contemporaries; that the preceding centuries were comparatively but ages of infancy, leading up to art's full and ultimate maturity in these great men.

We will now proceed to show that Raphael's career was throughout one of advancement, and not, as is now pretended, a retrogression. We are told that Raphael's mind became degenerate, and his later works corrupt; that he in his own life and practice was the turning point where that which was really true and admirable in art ended, and what was false first began; that, to quote the words of Mr. Ruskin, 'mediæval principles led *up* to Raphael, and modern principles lead *down* from him.' Now, our knowledge of Raphael's works does not justify this conclusion. That his later style differed from his early, is universally admitted; that he at first adopted the dry, rigid manner of his master, Perugino, is well known, and it is equally evident that he subsequently expanded into a freer, bolder, and more ambitious manner. The constant, untiring aim of Raphael's life was progression; with this end he studied the antique, and sought to attain and rival the excellences of his predecessors and contemporaries. His mind and diversified acquisitions were no incongruous compilations of conflicting materials, but all that dwelt within his thoughts, or obtained expression in his works, was suffused with the gentleness and beauty of his nature, and assimilate into the essence of his genius. It is, nevertheless, just possible that all this mental striving, this earnest pursuit after the highest excellence in his art, may have but led him in a career of downward degeneracy. This we say is possible, but most improbable. It is just possible that such an apparent paradox might, on full examination, prove as true as it is startling. It is barely possible that the concurrent judgment of all subsequent times may be mistaken, and Mr. Ruskin and 'the Brethren' in these last days alone right. All this is possible, nevertheless most improbable.

That the enthusiastic and exclusive admirers of the early masters should prefer Raphael's youthful to his later matured manner is naturally incident to the fanaticism of their tastes. By his first style he is in fact identified with mediæval art, the limited merits of which we have already examined and admitted. That Raphael in his later and matured period reached a higher art-consummation we shall now, as far as is possible, in words

unillustrated by the works themselves, proceed to show. Now, that a man in the full vigour and attainments of his thirty-seventh year shall have lost none of the special graces of a youth of twenty is improbable. That Raphael's early works possess the peculiar charm which generally pertains to the unobstrusive timidity and the conscientious care of undeveloped power we readily admit. That in spirit they are closely allied to the manner which reigned throughout the preceding centuries of art, cannot likewise be doubted. The world is not so prodigal of beauty, art not so rich in its choicest creations as to make us eager to ostracise any true art-manifestation. We have freely admitted the beauty of the early Italian works; we should do injustice to our tastes, and injury to the cause of art, did we deny their merits. On the same grounds we gladly acknowledge the simple, truthful, heartfelt spirit which is suffused over that early and most deservedly admired picture of the 'Sposalizio,' by Raphael, in Milan. We admit that the spiritual graces of this exquisitely refined and delicate work have never been surpassed, and possibly never equalled in any of his later works. So sincere and profound is our reverence for the genius of Raphael, that we cannot speak otherwise than in commendation of his earliest no less than of his latest productions. It is to us, who have in turn felt the spell and beauty of all his works, a distasteful task thus to make invidious comparisons or contrasts. Rather would we show that the same beauteous nature is stamped upon and dwells in all his works; that his genius may have diverse manifestations, but that in every stage of its growth it is essentially the same; that on its first dawn in youth we find youthful qualities and charms, and in its maturer age the unextinguished ardour, power, and capacity of manhood, without even the preludes of decay.

There is, however, a period when the genius of man may be said to culminate,—when, indeed, he attains to his majority, and fully establishes his freedom; when his acquirements give full scope and capacity of expression to his powers, this matured manhood wields with fullest efficacy his accumulated knowledge. Now, it seems to us most evident that Raphael in painting his earlier works had not attained to this majority and freedom. He was still under the trammels of his early education; his art was still restricted to the narrow limits of the preceding century; he was as yet a mere historical link of transition; he belonged to a circumscribed period, and not to all time; he was the expression of a partial art-development, not the exponent of entire humanity. It was during this restricted period, when his genius was under chains, and imprisoned in the past, that he painted his well-known picture of the 'Entombment,' now in the Borghese

Gallery at Rome. The 'Marriage of the Virgin,' at Milan, before referred to, although most winning from that quietism, tenderness, and subjective beauty and grace which seem the very life and soul of Raphael's genius, is yet a work in which his powers were not put forth in full force; we see them here unbending in graceful, tender dalliance with beauty; they are not as yet self-reliant in the full consciousness of strength. The same city of Milan contains as a contrast to this early work the completed cartoon for the School of Athens, subsequently executed in the Vatican. Here the full force of Raphael's genius, with all the wealth of his rich acquirements, found adequate scope and expression. The wisdom and philosophy of Greece, the greatest men in the golden epoch of perhaps the world's most renowned city, are here by the world's greatest painter assembled, as in a council of the gods. Countenances the most varied, characters the most diverse, are carefully studied and thought out, blended and brought together by the selfsame spirit of gentleness and urbanity which in Raphael's life drew all men unto him. Art and philosophy are here as helpmates united, each giving to the other an accession of its own glory and immortality. Philosophy, ceasing to be purely abstract, obtains pictorial expression, and art, allying itself to thought, mounts to philosophic heights, and walks with sages the temple of wisdom. Again we say that a career and life of mental discipline, a course of art-studies ultimately leading to such results may possibly have been a mistake, a degeneracy. It is, we say, possible, nevertheless most improbable. If in the great frescoes of the Vatican we could detect nothing but cold lifeless compilations from the antique; if Raphael, losing all inward fire, had in these mature works become a mere learned, lifeless painter, we too would join Mr. Ruskin and 'the Brethren' in their censure and regrets. But, on the contrary, we find his genius not oppressed and borne down, but enriched and amplified; learning became in him wisdom, the antique was assimilated into his own thoughts and emotions, and the classic thus became refashioned into the Raphaelesque. Raphael's countenance, so pure and beautiful, which he is said to have inherited from his mother, may be taken not only as the mirror of his mind, but as the key-note of all his works,—

> 'His heavenly face the mirror of his mind,
> His mind a temple for all lovely things
> To flock to and inhabit.'

Such are the words of Mr. Rogers; but he does not hint that the temple of Raphael's mind was given up to a false worship.

The individuality of each of the pre-Raphaelite masters is to a great extent merged and lost in the tradit onal treatment and stere-

otyped forms of the unemancipated art period in which they flourished; the Carracci, on the other hand, from an opposite cause, lost all individuality in the licence of abused liberty, and gained but the merits of the mocking-bird, which imitates every song of the forest, but has no music of its own. It is a distinguishing attribute of Raphael that his latest as well as his earliest works bear alike the stamp of well-marked individuality. He is immediately descended from the early masters, yet he is unlike them; he is brought under the direct influence of Michael Angelo, and while his manner becomes invigorated and enlarged, it still retains its essential beauty and purity; he lived likewise, as we have said, in an age of classic revival; yet all these influences were but circumstances and advantages which the truly great and original mind makes subservient to more expanded originality. Thus is it that in him the widest variety points to that central unity which constitutes the thought-focus of all self-sustained minds. In further confirmation of the fact that Raphael's career was one of continued progress we might refer to the last as likewise by general consent the greatest of his easel pictures, 'The Transfiguration.' The reader will recollect that the work was incomplete at the artist's death, and that it now ranks as the first oil picture in the world. Vasari says of the head of Christ: 'It was the greatest effort of the art, which could advance no further, and this last term of the painting marked also the term of the life of the painter. He never touched pencil more.' Vasari also tells us that this picture of 'The Transfiguration' was placed before the dead body of Raphael in the hall wherein he had last worked. Of this striking scene, and this greatest of pictures, Mr. Rogers thus writes:—

> And when all beheld
> Him where he lay, how changed from yesterday,
> Him in that hour cut off, and at his head
> His last great work; when entering in, they looked
> Now on the dead, then on that masterpiece,
> Now on his face, lifeless and colourless,
> Then on those forms divine that lived and breathed,
> And would live on for ages—all were moved;
> And sighs burst forth and loudest lamentations.

Surely it is reserved for Mr. Ruskin to discover and declare that it was Raphael, 'in his twenty-fifth year, one half year only past the precise centre of his available life,' when summoned to Rome to decorate the Vatican, who 'wrote upon its walls the *Mene Tekel Upharsin* of the arts of Christianity:' and from that spot and from that hour the intellect and art of Italy date their degradation. We are thankful to find that Mr. Leslie, in his 'Hand-book for Young Painters,' raises his voice against this

startling doctrine. He thus writes:—'I cannot understand the spirit of that criticism that can speak of his fall—*the fall of Raphael!*—be it observed, long before he painted the cartoons—and that can at the same time dwell with admiration on the meanness and inanity of the saints of Francia, and his unchild-like children.'

The cartoons here referred to by Mr. Leslie are, of all other works, the most conclusive evidence; if, indeed, further evidence be needed in refutation of the charge of 'Raphael's fall.' Of them, at all events, it cannot be said that the study of the antique, or the revival of classic literature, has in any wise corrupted or destroyed their true Christian character. In looking at these great productions, we feel, with Lavater, that 'Raphael is, and ever will be, an apostolic man; in other words, he is, with regard to painters, what the apostles were with regard to the rest of mankind.' We find that these cartoons, which, in the opinion of competent judges, are the very greatest of his works, were executed, not in youth, prior to that turning-point in his career, the commencement of his fall, and which Mr. Ruskin has determined, with such nice precision, as being 'one half year only past the precise centre of his available life;' they were not conceived and designed at the early age of twenty-five, the commencement of that fall, but upwards of five years later, when his degeneracy according to Mr. Ruskin, had become hopeless and irredeemable; they were executed, in fact, at that fatal period when Raphael had already sealed the destiny of Christian art and Italian intellect by enthroning the heathen Apollo in the world or kingdom of poetry. We appeal to our readers whether these works evince the fall and degeneracy of which Mr. Ruskin speaks. On the contrary, is it not with justice that they have ever been deemed models of true Christian art; not indeed the morbid enfeebled art of the convent and the cloister, not the petrified art of austerity and mistaken mortification of the body, but that healthful, manly art, which, of all others, is best suited to embody a faith and religion which, while claiming heavenly descent, yet finds its true sphere and duties in the actual conflict of life. These great works, indeed, in their freedom and vigour, are apostolic and universal; they exhibit not only art emancipated, but religion reformed. It would appear, indeed, judging from Raphael's later works, that the authority of his Church was waning in his mind, while the Christian religion, in its essential sense, truth and authentic history, remained still supreme. In this Raphael may have suffered an ecclesiastical fall; certainly, neither an artistic nor religious one. The well-known merits of these cartoons justly entitle them to that pre-eminent position which, by universal consent, they now occupy. No meretricious ostenta-

tion marks decline; knowledge of drawing, and of the human form, does not here degenerate into statuesque poses or obtrusive anatomical display. The execution and treatment are free, without being facile or florid; and the entire works, although executed expressly for an art manufacture, are true, genuine emanations, and no forced manufactured products.

We have thus, it is hoped, succeeded in showing that the cry of Raphael's degeneracy and fall is unfounded, and that the names of Leonardo, Michael Angelo, and Raphael, must still hold their accustomed supremacy in the realms of art. We have, likewise, in the course of our inquiries, seen upon what historical evidence the Pre-Raphaelite movement in this country rests. We have found in past records sufficient to account for the origin, if not to justify the career, of our present mediæval school. We have seen that its art antecedents are not only curious but instructive; that the ancient moral documents are titles to an honourable ancestry, if not the impassable limitations of future destiny. We have, on the present occasion more especially, concerned ourselves with the Italian Pre-Raphaelites; on a future opportunity, we may possibly examine more in detail the works and teachings of the men who, in our country, assume the manner and the name of these early progenitors.

ART. II.—*A History of British Ferns.* By Edward Newman, F.L.S., &c. London: John Van Voorst. 8vo. 1854.

2. *The Ferns of Great Britain.* Illustrated by John E. Sowerby. The Descriptions, Synonyms, &c., by Charles Johnson, Esq. Lambeth: J. E. Sowerby. 8vo. 1855.

3. *Popular History of British Ferns and the Allied Plants: comprising the Club Mosses, Pepperworts, and Horsetails.* By Thomas Moore, F.L.S. With Twenty Coloured Plates by Finch. London: Reeve. Royal 16mo. 1854.

OF late years, the cultivation of ferns has become fashionable; and we should find little fault with fashion if it always selected as its favourites forms as beautiful and objects as worthy of attention. Gardeners, or their patrons, have discovered that the graceful fronds and rich green hues of those elegant cryptogamic plants harmonize with the rugged outline of rock work; and that the waters trickling over and smoothing the sharp edges of unhewn stones cannot be better employed than in giving verdure and luxuriance to a soft bed of moss and a group of filices. This is no

new discovery. Men have always professed to believe that the excellence of art is to imitate the forms and distributions of natural objects. When gardens were made as if they were curiously devised geometrical figures prepared by mathematicians to invite demonstration, some little out of the way place might be found by going up in one corner or down in another, where a pigmy imitation of a cascade, or a ridiculously small lane overgrown by some matted creeper, required unhewn stones and a liberal sprinkling of ferns. But we shall not be curious to inquire how our friends have been employed in times past, for whether they are new friends or old friends in a new dress, we care but little, so that they are presented to us in the graceful ease of nature, and not with the stiff formalities of art. With this one restriction we welcome the ferns wherever we find them.

In selecting this beautiful class of the cryptogamia for careful cultivation, the art of landscape-gardening and the science of botany may be alike benefited; but it is in reference to the latter that we must consider the books before us; and of them it is not too much to say that they are creditable to their authors, and very honourable to the science of the age. The caprice of luxury and wealth under the fancied inspiration of an artistic spirit, brought the British ferns from their damp, rocky mountain homes, and the rugged banks of the dusky lanes they haunt, and planted them in the gardens of rich citizens, too often in vaults which make men shiver and women turn pale. But this is no business of ours. What men choose to pay for, they have a right to enjoy; within limits such a fancy is not likely to pass. But though often cultivated with a care ill-spent in the production of the grotesque or ridiculous, the artist drops them in the right places, and then it seems more simple and easy to obtain beauty than to create deformity. This is only a question of taste, with which science generally has little to do; for it is not the creature of fashion, and when it ministers to its wants, is never a slave to its absurdities. Our interest is in the three books before us, which would not, in all probability, have been written, had there not been a great demand for the plants they describe. They are all valuable descriptive works, calculated to raise the interest of the fern-grower in the beautiful forms he cultivates, and to convert, by the communication of sound botanical knowledge, the lounger into a thinking man. One would like to talk with an intelligent observing person in his fern nursery before and after a careful study of one of these books, that we might compare the busy trifling of ignorance with the quiet solicitude of knowledge, the fussy showman with the educated botanist. Without knowledge, a man's interest in such objects soon dies, but with it will increase; for the plaything, to be thrown away when it ceases to

amuse, becomes a study. Nor will there be any lack of subjects, for of the 19,000 species of cryptogamia, 3250 are ferns; of which about a fortieth part are natives of Britain. A few general remarks on the place which ferns hold in the vegetable kingdom, and on their distribution and numerical relation to plants of other kinds, may be useful as preparatory to the study of generic and specific differences.

When Ray formed his classification of plants, he divided the whole kingdom of vegetable life into two classes—the flowering and the flowerless. The flowerless plants were called the cryptogams by Linnæus, acotyledons by Jussieu and Decandolle. Both these names have been objected to because they rather represent what the plants are not than what they are. The necessary distinction, founded on structure, is now made by the adoption of the terms Exogens, Endogens, Acrogens, and Thallogens. The two former include the phanerogamic or flowering plants, and the two latter the cryptogams. The acrogens have, for the most part, a distinct root, a stem, and symmetrical leaves, by which they differ from the fungi, lichens, and algæ; but they may be divided into two classes founded on structure—the vascular and the cellular; the former includes the ferns and their allies.

The classification of the ferns among the acrogens points out that they do not increase the stems in diameter by additions outside like the exogens, nor inside like the endogens, but simply lengthen them by extension. The stem, which is generally procumbent and frequently hidden under ground, has received, from its root-like appearance, the name rhizoma. In tropical climes, however, there are arborescent ferns, some of which grow to the height of forty feet, and are crowned with a plume of foliage; but their cylindrical stems are of equal diameter throughout, and differ so much in many particulars from the stems of phanerogamic plants, that it has been thought necessary to find another name for them, and they are called stipes. They are usually hollow, but sometimes the centre is filled with spongy matter. The outer portion or case is of an entirely different structure from all flowering plants, and is composed, as Sir William Hooker says, 'of excessively hard plates folded upon themselves in such a manner that a section of them represents a number of sinuous lines doubling about among spongy matter.' The leaves or fronds, when in the bud, are coiled up like the spring of a watch, and gradually unfold in early summer, forced open by the reviving energy of the living force. But the best description of a fern is, perhaps, given by Mr. Francis:—

'A fern,' he says, 'is a flowerless plant, which has a fibrous root, vascular stem, veined leaves, reticulated cuticle, furnished with stomata,

and bears spores as fruit in capsular receptacles. The ferns and their allies, form the first order of the Linnæan class cryptogamia, and their structure shows such an intermediate character between the vasculares and cellulares, that all systems of classification have assigned them this station among vegetables. They are without flowers, have but imperfectly formed vessels, and no deposition of real woody fibre; therefore cannot, with propriety, be arranged with phanerogamous plants, while their semi-vascular texture, and their fully-developed leaves, show their organization to be greatly above that of any other order of cryptogamic plants.

'Although the true ferns,' he adds, 'have a direct analogy with the palmæ and cycadeæ, the connexion between them and other orders is more apparent in the pteroides or fern allies, particularly the equiseta and lycopodia. . . . Thus the tribes under consideration, which are divided according to the modern system into filiciales, lycopodales, and equisetales, the first the true ferns, the other the pteroides or fern allies, altogether form valuable because well-connecting links in the great chain of nature.'—'Francis on Ferns and their Allies.' 1837.

As the ferns are flowerless plants, they are of course without seed in the ordinary acceptation of the word, and their mode of propagation must be essentially different from that of the phanerogamia. The reproductive germs, spores, or sporules, for as they have no cotyledon, radicle, or plumule, the term seed cannot be used without giving it a new definition, are granular bodies, and the cases are elaborately organized. These are formed on the under side, or the margin of the fronds, and yet, as an anonymous writer says, no difference exists between seeds and sporules, except as to the origin, organization, and mode of development of the latter. Instead of having their centre divided into plumule and radicle, to which one or two cotyledons are attached, they are mere homogeneous masses of cellular substance, and instead of uniformly growing from two constant points of their substance, from the one upwards and from the other downwards, they are capable of sprouting into root or stem indifferently from any point of their surface.' By what process this is done we do not know, and it is not easy to account for so singular a deviation from the constancy of the phenomena attending the germination of the phanerogamia. Some botanists have of late doubted the accuracy of this explanation of the production of ferns. Count Suminiski has discovered by microscopic examination an organization in ferns, supposed to be sufficient for fructification. The female organ is said to be situated in ovate cells in the middle of the sporangium, and the male in the organs producing threads (the ciliated antheridia), and the motion of these threads is supposed to produce the same effect as the pollen tubes. If this supposition should be proved, the spores on the under side of the frond are flower

buds. Mr. Newman says, 'abundant evidence exists, that there is in these discoveries no contradiction to the assertion, that acrogens, so far as our researches have extended, are perfectly asexula.' Nor does Mr. Johnson find any reason to give a new description of the reproducing organs, as will appear from the following passages, in which he clearly defines some terms necessary to be known, and explains phenomena supposed to be connected with the continuance of the species:—

'The representative germs of the flowerless plants are very minute, indeed generally microscopic, and notwithstanding the gigantic size of some members of the fern tribe, no exception occurs in this respect; their production apparently taking place under different laws to those which regulate the fructifying function in flowering plants; they are not called seeds, but spores or sporules, and are inclosed in little cases denominated thecæ, which, in the ferns, are mostly aggregated in small clusters of different size and shape, termed sori, and arise from the veins on the under surface of the frond, or from their extremities on its margin; in some instances the thecæ, instead of forming sori, are associated in spikes or clusters, called panicles, formed by the depauperation of the fructifying frond, or of its lobes. The primary development of the thecæ takes place in immediate contact with the vein, and beneath the epidermis, or outer covering of the leaf, which is forced up by their enlargement in the form of a whitish membrane, constituting the indusium, or protecting cover of the sori. During the advance of the fructification towards maturity, the indusium separates partly or wholly from the surrounding epidermis, and subsequently either shrivels and becomes hidden by the bursting of the thecæ, or falls off altogether. In some instances, the opening takes place in the centre, the indusium investing the sorus like a cup, when it is styled, though erroneously, an involucre; while in others, the epidermis from both surfaces of the leaf extends beyond the margins, including the thecæ between them, and fulfilling the office of indusium without being regarded as such: occasionally this marginal separation and extension of the leaf membrane takes place uninterruptedly along the whole edge, but it is often only local, and about the soriferous extremities of the lateral veins. In a few genera the indusium cannot be traced, the sori appearing to be produced externally; but this probably in all cases arises from the very early period of growth, at which the disruption takes place, as careful examination of some species of polypodium readily discovers.'—Introduction, p. 4.

A mild but uniform temperature, with an abundant supply of moisture, are the atmospheric conditions best adapted to the growth of the filices. We must not look for them in open plains or places exposed to sun and wind, but in sheltered nooks under the shadow of rocks, moistened by the oozing stream—on the banks of deeply-cut lanes, where trees over-arch the path, and shut out the bright glare of sunlight, preventing evaporation—and in the recesses of mountain chains, where moist clouds drift

over the surface, and night drops a curtain of thick mist. That such are the localities favourable to the growth and reproduction of the filices, appears from the distribution of the arborescent ferns in tropical climes, as well as of the polypodiaceæ and its kindred groups in higher latitudes. The picturesque arborescent ferns have a great resemblance to the palms, those 'kings among grasses,' but their stems are more rough and scaly, and thicker in proportion to their height. They are properly designated tropical plants, but are found at elevations in temperate and equable climate. In South America they are seldom found at an elevation of less than 1280 feet above the level of the sea, with a mean temperature between 64° and 70° Fahrenheit. On the declivities of the Cordilleras the true region of the arborescent ferns is at an elevation of from 3200 to 5250 feet. On account of the greater atmospheric humidity of the southern than of the northern hemisphere, they advance further from the equator on one side than on the other. To the north they are not found beyond the tropic of Cancer. In the southern hemisphere the tree fern is found at Hobart Town, in Van Diemen's Land (42° 43′ lat.), where there is an annual mean temperature of 52° 2′ Fahrenheit; the Dicksonia squamosa flourishes in Dusky Bay, New Zealand (46° 8′ lat.), and the aspidium venestrum in the Auckland and Campbell Islands (53° lat.). The dependence of the distribution of the filices upon favourable atmospheric conditions, is clearly exhibited in the numerical calculations collected by Humboldt—

'The climatal relations under which ferns generally flourish are manifested in the numerical laws of their quotients of distribution. In the plains within the tropical regions of large continents, this quotient is, according to Robert Brown, and from more recent investigations on the subject, $\frac{1}{20}$ of all the phanerogamia, and in mountainous districts of large continents from $\frac{1}{6}$ to $\frac{1}{8}$. The ratio is quite different on the small islands scattered over the ocean, for here the proportion borne by the number of ferns to the sum total of all the phanerogamic plants increases so considerably, that in the South Sea Islands the quotient rises to $\frac{1}{4}$, while in the Sporadic Islands, St. Helena and Ascension, the number of ferns is almost equal to half the whole phanerogamic vegetation. In receding from the tropics (where on the large continents D'Urville estimated the proportional number at $\frac{1}{20}$) the relative frequency of ferns decreases rapidly as we advance into the temperate zone. The quotients are for North America and the British Islands $\frac{1}{35}$, for France $\frac{1}{58}$, for Germany $\frac{1}{52}$, for the dry parts of Southern Italy $\frac{1}{74}$, for Greece $\frac{1}{84}$. The relative frequency again increases considerably towards the frigid north. Here the family of ferns decreases much slower in the number of its species than does that of the phanerogamic plants. The luxuriantly aspiring character of the species, and the number of individuals contained in each, augment the deceptive impression of *absolute* frequency. According

to Wahlenberg's and Hornemann's 'Catalogue,' the relative number of filices are for Lapland $\frac{1}{25}$, for Iceland $\frac{1}{18}$, for Greenland $\frac{1}{12}$.'—'Views of Nature,' pp. 339, 340.

We shall not quickly tire of examining the beautiful ferns of our own country, to say nothing of those of foreign growth, for their physiology and mode of reproduction are still subjects for examination. But at the same time, we cannot forget that this form of vegetable life has long been an inhabitant of our world, and that when flowering plants and fruit bearing trees were rare, they covered much of what there was of dry ground. The remains of arborescent ferns largely contributed to the formation of the masses of coal which have made England so rich in manufactures and industry. In the coal formation alone there are more that 120 species of filices, chiefly belonging to the polypodiaceæ family, to which the greater number of the living arborescent ferns also belong. With these are associated other cryptogamic plants, in so great an abundance that the remains of the phanerogamia are relatively rare. At this early period in the history of the world, all the cryptogamic plants attained a great size, exceeding that of the largest now growing in the tropics. From these facts, taken in connexion with what we know of the distribution of the ferns and their allies, some probable conjecture may be formed of the state of the earth at the time of the deposition of the coal measures. It is supposed that the plants whose remains have in the lapse of ages been converted into coal, grew in low marshy districts, and that their remains were accumulated by the ordinary process of decay and occasional denudations. This may account for some of the cryptogamia found in great abundance, but the arborescent ferns, as we have seen, do not flourish in the low flooded grounds of tropical countries, but at considerable elevations above the level of the sea. It is therefore probable, that when the vegetable matter of which coal is formed, was growing on the surface, there were lofty elevations as well as low swamps, and that the arborescent ferns of that age, like those of the present, lived in a moist atmosphere, with a warm vernal temperature, on slopes like those of the Andes. We must therefore demur to the conclusion of M. Brongniart, though indorsed by many eminent geologists, that the large abundance of ferns and vascular cryptogamia gives a probability to the supposition, that the temperature of the earth was at that time greater than it is now in equatorial regions. In association with the fossil ferns many of their allies are found. The equisetæ, during the carboniferous age, were not such puny things as now grow in swamps and ditches from Lapland to the equator, but plants ten feet high and five or six inches in diameter; and the lycopodiaceæ, a lost link between the ferns

and coniferæ, and so called from their resemblance, except in size, to the club mosses, grew to the height of sixty and seventy feet. They resembled the ferns in the abundance of axilar ducts, and the coniferæ in their stems, but bore a general resemblance to the club mosses.

These remarks will be sufficient to show that the interest attached to the study of the vascular cryptogamia is not confined to living species, and we may hope that the publication of the books before us will aid the progress of an important branch of fossil botany. It is a subject beset with difficulties, and all the more uncertain in its conclusions from the rare preservation of perfect specimens. The combined labours of many intelligent observers, intimately acquainted with existing forms, is therefore required, and all that is calculated to educate such men for the service of geology must receive the approbation of naturalists.

ART. III.—*The Fur Hunters of the Far West; a Narrative of Adventures in the Oregon and Rocky Mountains.* By Alexander Ross. In Two Volumes. Post 8vo. London: Smith, Elder, & Co.

THE author of this work is entitled to respectful hearing. His volumes, unlike many which our prolific press sends forth, have something to tell. There is an honest purpose in them. A veritable narrative is given, and the intelligent reader will rise from their perusal with information which it is difficult to obtain, and with strong confidence both in the integrity and in the intelligence of the author. For forty-four years Mr. Ross resided in the Indian territories of North America. The first fifteen of these years was spent in Columbia, the extreme point of the 'Far West;' the remaining twenty-nine have been passed in the Red River settlement, 'a spot more effectually cut off from the rest of the world than any other colony of the empire.' During the earlier period of his career he was actively engaged in commerce; first, in connexion with the Pacific Fur Company; then with the 'North West;' and lastly with the Hudson's Bay Company. Having published in 1849 his adventures, in connexion with the first of these companies, he is now encouraged to attempt a more extended narrative, which, with all the interest of its predecessor, has attractions of its own not frequently equalled. 'His aim has been to exhibit realities; to relate facts as they have occurred; to impart to others at their quiet firesides the interest of a wild and adventurous life, without its

toils, privations, and dangers, and to adhere always to the simple truth. As, then, these volumes range over a wider expanse of Indian territory than the former, so do they introduce new features of Indian life and manners. Regions unvisited, and now only partially explored, are portrayed as they appeared to the first civilized intruder in the wilderness.'

Mr. Ross's commercial engagements were those of the fur trade, which brought him into frequent contact with the Indians; exposed him to many perilous adventures, and has pre-eminently qualified him to describe the occupations and habits of the wilderness. It is no *dilettante* record with which we are here furnished. The work performed by our author was rough and perilous. It involved the sacrifice of many lives, and was frequently attended with much hardship. The narrative given partakes of this character. It is a clear, unvarnished, business-like statement, the deep interest of which arises from the facts reported, and not from the artistic skill of the narrator. Not that there is any deficiency in the latter quality, but that the author is too fully occupied with the history he records to be much concerned about the mode in which he presents it. The great interest of the work is derived from the peculiar phase under which human life is seen. We have been wearied with the *common-places* of modern travel. The eternal round of the same unmeaning sentimentalisms has become perfectly disgusting. The mere sight of such volumes is sickening. We turn from them with distaste, assured that the intellectual region they unfold—if such, indeed, it may be termed—is a dead level, without one point of interest, or any capability of exercising a healthful mental influence. Mr. Ross's volumes differ from all this. They introduce us to another world; paint men and women in a somewhat different color from that in which they are ordinarily seen. They disclose in part, at least, the secrets of the wilderness, and whilst they correct many of our previous notions, they add considerably to the domains of knowledge.

The Oregon territory is little known to Englishmen. It lies at the extreme west of North America, between Canada and California, and was matter of dispute between Great Britain and the United States a few years since. That dispute, however, was happily settled by the Conventions of 1839 and 1846. At the time to which these volumes relate, few white men inhabited this district. The solitariness of the forest was scarcely disturbed, and vast numbers of beavers rewarded the labors and the toils of adventurers. This state of things, however, is passing away. The Indians, formerly so numerous and dreaded, are disappearing. The fur trade has almost perished, and the plough is rapidly extending the domains of civilization. 'Churches,' says

Mr. Ross, 'are already rising upon villages, schools are multiplying, the hymn of peace has taken the place of the wild song of the savage; and soon all traces of the past will be in the memorials which the pen has preserved.'

Some of our readers may possibly regret this change. We cannot say we do. That there have been much misery and many crimes involved in it, we do not doubt; over these we mourn, but the general result is favorable to human virtue and happiness. Nor can we conceal from ourselves the fact that the Indian of these volumes is a vastly different being from the Indian of the novelist and the poet. He has some noble qualities which, apart, may render him an object of special interest; but there are others which, as seen in real life, awaken emotions of a vastly different order. But it is time that we turn to the volumes themselves. The following brief extract will inform our readers of one kind of danger to which our author was exposed:—

'I slept but little during the night: my mind was too occupied to enjoy repose, so we got up and started at an early hour. Our journey to-day was through a delightful country of hill and dale, wood and plains. Late in the afternoon, however, we were disturbed and greatly agitated, by a fearful and continuous noise in the air, loud as thunder, but with no intervals. Not a breath of wind ruffled the air; but towards the south-west, from whence the noise came, the whole atmosphere was darkened, black, and heavy. Our progress was arrested; we stood and listened in anxious suspense for nearly half an hour, the noise still increasing, and coming, as it were, nearer and nearer to us. If I could compare it to anything, it would be to the rush of a heavy body of water, falling from a height; but when it came opposite to where we stood, in a moment we beheld the woods before it bending down like grass before the scythe! It was the wind, accompanied with a torrent of rain—a perfect hurricane, such as I had never witnessed before. It reminded me at once of those terrible visitations of the kind peculiar to tropical climates. Sometimes a slight tornado or storm of the kind has been experienced on the Oregon, but not often. The crash of falling trees, and the dark, heavy cloud, like a volume of condensed smoke, concealed from us at the time the extent of its destructive effects. We remained motionless until the storm was over. It lasted an hour; and, although it was scarcely a quarter of a mile from us, all we felt of it was a few heavy drops of rain, as cold as ice, with scarcely any wind: but the rolling cloud passed on, carrying destruction before it, as far as the eye could follow. In a short time we perceived the havoc it had made, by the avenue it left behind. It had levelled everything in its way to the dust: the very grass was beaten down to the earth for nearly a quarter of a mile in breadth.

The Indian that I had along with me was so amazed and thunderstruck with superstition and fear at what he had seen, that his whole frame became paralysed: he trembled, and sighed to get back. He refused to accompany me any further; and all I could either say or

do could not turn him from his purpose. At least, seeing all mild endeavours fail, I had recourse to threats; I told him I would tie him to a tree and proceed alone. At last he consented, and we advanced to the verge of the storm-fallen timber, and encamped for the night.' —Vol. i. pp. 48, 49.

Notwithstanding, however, this consent, Mr. Ross placed no reliance on his Indian companion. Seeing the reluctance with which he prosecuted the journey, and being apprehensive of his escape, 'I endeavoured,' he says, 'to watch his motions as closely as possible during the night: yet, in spite of all my watchfulness, he managed to give me the slip, and in the morning I found myself alone! I looked about in all directions for him, but to no purpose; the fellow had taken to his heels and deserted.'

Another enemy shortly appeared. The principal chief of the Oakanagan Indians came to Mr. Ross, with a serious countenance, informing him that strange wolves, as large as buffaloes, were coming up the river, killing everything in their way; and so fierce as to set at defiance all the measures that could be arrayed against them. On the third day after this communication, the wolves made their appearance, and killed five horses during the night.

'On discovering in the morning the havoc the unwelcome visitors had made, I got a dozen steel traps set in the form of a circle round the carcase of one of the dead horses; then removing the others, and keeping a strict guard on the live stock, we waited with anxiety for the morning. Taking a man with me, and our rifles, we set out to visit the traps; on reaching the spot, we found four of them occupied. One of them held a large white wolf by the fore leg, a foot equally large was gnawed off and left in another, the third held a fox, and the fourth trap had disappeared altogether. The prisoner held by the leg was still alive, and certainly, as the chief said, a more ferocious animal I never saw. It had marked and cut the trap in many places; it had gnawed and almost consumed a block of oak, which held fast the chain, and in its fruitless efforts had twisted several links in the chain itself. From the moment we approached it, all its efforts were directed towards us. For some time we stood witnessing its manœuvres, but it never once turned round to fly from us: on the contrary, now and then it sprang forward to get at us, with its mouth wide open, teeth all broken, and its head covered with blood. The foot which the trap held was gnawed, the bone broken, and nothing holding it but the sinews. Its appearance kept us at a respectful distance, and although we stood with our guns cocked, we did not consider ourselves too safe, for something might have given way, and if so, we should have regretted our curiosity; so we fired two shots, and put an end to its sufferings. Its weight was a hundred and twenty-seven pounds; and the skin, which I gave to the chief, was considered a valuable relic. Leaving the chief in a joyful humour, the man and myself followed the

faint traces of the lost trap which occasionally appeared upon the crust of the snow. Having proceeded for some miles, we at length discovered the wolf with the trap at his heels, making the best of his way over a rugged and broken surface of rocks, ravines, hills, and dales; sometimes going north, sometimes south, in zig-zag courses, to suit his escape and deceive us; he scampered along at a good trot, keeping generally about a quarter of a mile ahead of us. We had not been long in the pursuit, however, before the man I had with me, in his anxiety to advance, fell and hurt himself, and had to return home; I, however, continued the pursuit with great eagerness for more than six hours, until I got a shot. It proved effectual. Had any one else done it I should have praised him; for at the distance of one hundred and twelve yards, when nothing but the head of the wolf appeared, my faithful and trusty rifle arrested his career and put an end to the chase, after nearly a whole day's anxious pursuit.

'Some idea of the animal's strength may be conveyed to our readers from the fact, that it had dragged a trap and chain, weighing eight pounds and a half, by one of its claws, a distance of twenty-five miles, without appearing in the least fatigued.'—Ib. pp. 63-65.

It appears that there were three wolves of unusual size in this pack, but these were accompanied by numerous smaller ones. Two of the larger wolves are sufficient to destroy the most powerful horse, and the mode in which their attack is conducted is singularly ingenious and amusing.

'If there is no snow, or but little, on the ground, two wolves approach in the most playful and caressing manner, lying, rolling, and frisking about, until the too credulous and unsuspecting victim is completely put off his guard by curiosity and familiarity. During this time the gang, squatted on their hind quarters, look on at a distance. After some time spent in this way, the two assailants separate, when one approaches the horse's head, the other his tail, with a slyness and cunning peculiar to themselves. At this stage of the attack, their frolicsome approaches become very interesting—it is in right good earnest; the former is a mere decoy, the latter is the real assailant, and keeps his eyes steadily fixed on the ham-strings or flank of the horse. The critical moment is then watched, and the attack is simultaneous: both wolves spring at their victim the same instant, one to the throat, the other to the flank, and if successful, which they generally are, the hind one never lets go his hold till the horse is completely disabled. Instead of springing forward or kicking to disengage himself, the horse turns round and round without attempting a defence. The wolf before, then springs behind, to assist the other. The sinews are cut, and in half the time I have been describing it, the horse is on his side; his struggles are fruitless: the victory is won. At this signal, the lookers-on close in at a gallop, but the small fry of followers keep at a respectful distance, until their superiors are gorged, then they take their turn unmolested. The wolves, however, do not always kill to eat; like wasteful hunters, they often kill for the pleasure of killing, and leave the carcases untouched. The helplessness of

the horse when attacked by wolves is not more singular than its timidity and want of action when in danger by fire.'—Ib. pp. 66, 67.

On one occasion, a party of trappers was forbidden by the Indians to hunt in the Wallamitte, and a larger party having subsequently been dispatched to pacify the natives, a serious encounter took place, in which three of the Indians were killed, and one of the hunters was severely wounded. The commercial operations of the traders were seriously checked by these occurrences. Those in command were earnestly desirous of remedying the mischief; and for this purpose a strong party was placed under Mr. Ross's charge. Of the singularly characteristic negotiations which took place, the following account is given:—

'This half-diplomatic, half-military embassy, consisting of forty-five armed men, left Fort George in three boats, and reached the Wallamitte falls on the third day. It was there the Indians had assembled to resist any attempt of the hunters to ascend the Wallamitte. There we found them encamped on the left or west bank. We took up our position, with two field-pieces to guard our camp, on the east or right-hand side, which is low, rocky, and somewhat uneven. Both parties were opposite to each other, with the river between them. Early the next morning, we set the negotiation on foot, and made several attempts, but in vain, to bring the Indians to a parley. I went to their camp; we offered them to smoke, and held out the hand of friendship in every possible way we could; but to no purpose. They refused holding any communication with us; but continued to sing their war-songs, and danced their war-dance. We, however, were not to be discouraged by any demonstrations on their part.

'Patience and forbearance do much on these occasions. It is the best policy to be observed with Indians; indeed with all the natives of Columbia. Peace being our object, peace we were determined to obtain. We therefore quietly waited to see what time would bring about.

'The first day passed without our effecting anything, and so did the second; friendly offers were constantly held out to them, but as constantly rejected. On the third day, however, the chiefs and warriors crossed over to our side, and stood in a group at some distance from our camp. I knew what was meant by this; so I took a flag in my hand, and went alone to meet them. Just as I had reached the party, the whole Indian camp burst into a loud and clamorous scene of mourning. That moment, the chiefs and warriors, forming a ring, squatted down, and concealing their faces with their garments, remained silent and motionless for about the space of half an hour. During all this time I had to stand patiently and await the result. Not a word was uttered on either side; but as soon as the lamentations ceased in the camp, the great men, uncovering their faces, stood upon their feet. I then offered the pipe of peace, according to Indian custom; but a significant shake of the head from the principal chief was the only reply.

'After a momentary pause, the chief, turning to me, exclaimed in his own language, "What do the whites want?" Rather nettled at his refusing the pipe, I answered, "Peace—peace is what we want;" and in saying so, I presented him with my flag. "Here," said I; "the great chief of the whites sends you that as a token of his love." A moment or two passed in silence; a whisper went round; the peace-offering was accepted, and in return, the chief took a pipe, painted and ornamented with feathers, and laid it down before me. This was a favourable sign. On such occasions, the calumet of peace is always an emblem of friendship. They were gratified with the toy; it pleased them. The chief asked to smoke. I then handed him the pipe he had but a little before refused, and some tobacco, and they sat down and commenced smoking; for that is the introductory step to all important affairs, and no business can be entered upon with these people before the ceremony of smoking is over.'—Ib. pp. 103-106.

A rude treaty was subsequently agreed on, and it is due to the uncivilized man to state that Mr. Ross asserts 'that the Indians faithfully and zealously observed their parts of the treaty for many years afterwards.'

The following sketch of an Indian banquet will not be uninteresting to our readers. We need say nothing of its want of refinement; this is sufficiently obvious. It evidently forms one of the first links in that extended chain which binds in a common brotherhood the lower and the higher types of humanity. Compared with the European, a North American Indian is a savage; but compared with the Australian aborigines he is far advanced in mental culture:—

'On the score of cheer, we will here gratify the curiosity of our readers with a brief description of one of their entertainments, called an Indian feast. The first thing that attracts the attention of a stranger, on being invited to a feast in these parts, is, to see seven or eight bustling squaws running to and fro with pieces of greasy bark, skins of animals, and old mats, to furnish the banqueting lodge, as receptacles for the delicate viands: at the door of the lodge is placed, on such occasions, a sturdy savage with a club in his hand, to keep the dogs at bay, while the preparations are going on.

'The banqueting hall is always of a size suitable to the occasion, large and roomy. A fire occupies the centre, round which, in circular order, are laid the eatables. The guests form a close ring round the whole. Every one approaches with a grave and solemn step. The party being all assembled, the reader may picture to himself our friend seated among the nobles of the place, his bark platter between his legs, filled top-heavy with the most delicious *mélange* of bear's grease, dog's flesh, wappatoes, obellies, amutes, and a profusion of other viands, roots, and berries. Round the festive board, placed on *terra firma*, all the nabobs of the place are squatted down in a circle, each helping himself out of his platter with his fingers, observing every now and then to sleek down the hair by way of wiping the hands. Only one

knife is used, and that is handed round from one to another in quick motion. Behind the banqueting circle sit, in anxious expectation, groups of the canine tribe, yawning, howling, and growling; these can only be kept in the rear by a stout cudgel, which each of the guests keeps by him, for the purpose of self-defence; yet it not unfrequently happens that some one of the more daring curs gets out of patience, breaks through the front rank, and carries off his booty; but when a trespass of this kind is committed, the unfortunate offender is well belaboured in his retreat, for the cudgels come down upon him with a terrible vengeance. The poor dog, however, has his revenge in turn, for the squabble and brawl that ensues disturbs all the dormant fleas of the domicile. This troop of black assailants jump about in all directions, so that a guest, by helping himself to the good things before him, keeping the dogs at bay behind him, and defending himself from the black squadrons that surround him, pays, perhaps, dearer for his entertainment at the Columbian Cascades than a foreign ambassador does in a London hotel!'—Ib. pp. 112, 113.

The Indians are fickle and wayward as children. Several instances of this are recorded, to which we can only allude in passing. On one occasion, Mr. Ross missed a small terrier, which, on escaping from captivity, scampered towards its master's tent, and was followed by two Indians with their guns. The latter attempted to shoot the dog, but the former very naturally interposed on behalf of his little pet. A child of one of the Indians had been scratched by the dog, and the consequences of the rupture threatened to be serious. A slight concession, however, averted the danger. Putting the camp in a posture of defence, the leader of the traders and Mr. Ross went to the Indians. 'We gave the scratched bantling,' he says, 'a small present; invited the chiefs to our camp to smoke, gave them a little tobacco, and parted once more the best friends in the world: and all this did not take us two hours' time, nor cost five shillings.' Mr. Ross may well remark, 'that the Indian is, in some respects, a mere child, irritated by and pleased with a trifle.' Instead, however, of being treated with the forbearance due to childhood, every possible advantage is taken of his simplicity, and the worst passions are frequently indulged at his cost. The Iroquois Indians were employed in the service of the traders and evinced unhappily the worst vices of both classes. They were the frequent cause of dispute, and were always ready to indulge their native ferocity to the utmost.

One of their number having been killed in a quarrel, which themselves had stimulated, a considerable party, under charge of Mr. Ogden, was despatched from Fort George to punish the murderers, and to settle the affair. On approaching the Indian encampment, he earnestly counselled the Iroquois to be very guarded in their demeanor, but they arrived unhappily at the

tents of their enemies prior to Mr. Ogden; 'and instead of waiting for orders, or ascertaining whether those they had found were or were not the guilty persons, the moment they got within gunshot of the Indians, they fired on all they saw.' Twelve persons were thus killed, and even after Mr. Ogden's arrival, and notwithstanding his utmost efforts to stay the slaughter, another was shot. To crown the whole, the Iroquois scalped three of their victims, and on returning to Fort George, exhibited these sanguinary trophies on poles, and danced with them in the square.

A still more atrocious instance is recorded by our author in a subsequent portion of his work. No doubt there were provocations, but the men who could enact the following, partook rather of the nature of demons than of human beings. Anything more disgustingly cruel we never met with:—

'As soon as our people had got over the second ravine, they took a sweep, wheeled about, and met the Indians in the teeth; then dismounting, the battle began, without a word being spoken on either side. As soon as the firing commenced, the Indians began their frantic gestures, and whooped and yelled with the view of intimidating; they fought like demons, one fellow all the time waving a scalp on the end of a pole; nor did they yield an inch of ground till more than twenty of them lay dead; at last, they threw down their guns, and held up their hands as a signal of peace. By this time our people had lost three men, and not thinking they had yet taken ample vengeance for their death, they made a rush on the Indians, killed the fellow who held the pole, and carried off the scalp and the five horses. The Indians then made a simultaneous dash on one side, and got into a small coppice of wood, leaving their dead on the spot where they fell. Our people supposed that they had first laid down their arms and next taken to the bush because they were short of ammunition, as many of the shots latterly were but mere puffs. Unfortunately for the Indians, the scalp taken proved to be none other than poor Anderson's, and this double proof of their guilt so enraged our people, that to the bush they followed them.

'M'Donald sent to the camp for buck-shot, and then poured volleys into the bush among them, from the distance of some twenty or thirty yards, till they had expended fifty-six pounds weight; the Indians all this time only firing a single shot now and then, when the folly and imprudence of our people led them too near; but they seldom missed their mark, and here three more of the whites fell. At this part of the conflict, two of our own people, an Iroquois and a Canadian, got into a high dispute which was the bravest man; when the former challenged the latter to go with him into the bush and scalp a Piegan. The Canadian accepted the challenge; taking each other by one hand, with a scalping knife in the other, savage like, they entered the bush, and advanced until they were within four or five feet of a Piegan, when the Iroquois said, "I will scalp this one, go you and scalp another;" but just as the Iroquois was in the act of stretching out

his hand to lay hold of his victim, the Piegan shot him through the head, and so bespattered the Canadian with his brains that he was almost blind; the latter, however, got back again to his comrades, but deferred taking the scalp.

'M'Donald and his men being fatigued with firing, thought of another and more effectual plan of destroying the Piegans. It blew a strong gale of wind at the time, so they set fire to the bush of dry and decayed wood; it burnt with the rapidity of straw, and the devouring element laid the whole bushes in ashes in a very short time. When it was first proposed, the question arose who should go and fire the bush, at the muzzle of the Piegan's guns. "The oldest man in the camp," said M'Donald; "and I'll guard him." The lot fell upon Bastony, a superannuated hunter on the wrong side of seventy; the poor and wrinkled old man took the torch in his hand and advanced, trembling every step with the fear of instant death before him; while M'Donald and some others walked at his heels with their guns cocked. The bush was fired, the party returned, and volleys of buck-shot were again poured into the bush to aid the fire in the work of destruction.

'About one hundred yards from the burning bush, was another much larger bush, and while the fire was consuming the one, our people advanced and stationed themselves at the end of the other, to intercept any of the Piegans who might attempt the doubtful alternative of saving themselves by taking refuge in it. To ensure success, our people left open the passage from the one bush to the other, while they themselves stood in two rows, one upon each side, with their guns cocked; suddenly the half-roasted Piegans, after uttering a scream of despair, burst through the flames and made a last and expiring effort to gain the other bush; then our people poured in upon each side of them a fatal volley of ball and buck-shot, which almost finished what the flames had spared. Yet, notwithstanding all these sanguinary precautions, a remnant escaped by getting into the bush. The wounded victims who fell under the last volley, the Iroquois dealt with in their own way—with the knife.'—Vol. ii. pp. 56-59.

But we turn to more pleasing topics. The principal occupation of the white man in this distant territory is trapping the beaver, and the mode adopted in this pursuit is thus briefly described:—

'A safe and secure spot, near wood and water, is first selected for the camp. Here the chief of the party resides with the property. It is often exposed to danger of sudden attack, in the absence of the trappers, and requires a vigilant eye to guard against the lurking savages. The camp is called head-quarters. From hence all the trappers, some on foot, some on horseback, according to the distance they have to go, start every morning, in small parties, in all directions, ranging the distance of some twenty miles around. Six traps is the allowance for each hunter; but to guard against wear and tear, the complement is more frequently ten. These he sets every night, and visits again in the morning; sometimes oftener, according to distance, or other circum-

stances. The beaver taken in the traps are always conveyed to the camp, skinned, stretched, dried, folded up with the hair in the inside, laid by, and the flesh used for food. No sooner, therefore, has a hunter visited his traps, set them again, and looked out for some other place, than he returns to the camp, to feast, and enjoy the pleasures of an idle day.

'There is, however, much anxiety and danger in going through the ordinary routine of a trapper's duty. For as the enemy is generally lurking about among the rocks and hiding-places, watching an opportunity, the hunter has to keep a constant look-out; and the gun is often in one hand, while the trap is in the other. But when several are together, which is often the case in suspicious places, one-half set the traps, and the other half keep guard over them. Yet, notwithstanding all their precautions, some of them fall victims to Indian treachery.

'The camp remains stationary while two-thirds of the trappers find beaver in the vicinity; but whenever the beaver becomes scarce, the camp is removed to some more favourable spot. In this manner, the party keeps moving from place to place, during the whole season of hunting. Whenever serious danger is apprehended, all the trappers make for the camp. Were we, however, to calculate according to numbers, the prospects from such an expedition would be truly dazzling: say, seventy-five men, with each six traps, to be successfully employed during five months; that is, two in the spring, and three in the fall, equal to 131 working days, the result would be 58,950 beaver! Practically, however, the case is very different. The apprehension of danger, at all times, is so great, that three-fourths of their time is lost in the necessary steps taken for their own safety. There is also another serious drawback unavoidably accompanying every large party. The beaver is a timid animal; the least noise, therefore, made about its haunt will keep it from coming out for nights together; and noise is unavoidable when the party is large. But when the party is small, the hunter has a chance of being more or less successful. Indeed, were the nature of the ground such as to admit of the trappers moving about in safety, at all times, and alone, six men, with six traps each, would, in the same space of time, and at the same rate, kill as many beavers—say 4716—as the whole seventy-five could be expected to do! And yet the evil is without a remedy; for no small party can exist in these parts. Hence the reason why beavers are so numerous.'—Vol. i. pp. 228-230.

Another Indian custom is illustrated by the following, which will be read with interest by those who are concerned to attain an accurate knowledge of Indian life. It may be well for us to bear in mind that our superiority is not always so complete as we imagine. Many of the ceremonies practised by the denizens of the forest appear to us ridiculous, but we may profitably ask whether the evasions and duplicity practised by European diplomatists do not indicate still more reprehensible qualities?

Rudeness and ignorance may be obvious in the one case, but the deeper stain of moral delinquency is frequently shown in the other. But to our extract :—

'The chief's lodge was quickly put in order, with a fire in the centre, when the ceremony of ratifying the peace, according to Indian form, commenced. The two Cayouse plenipotentiaries were placed in the back part of the tent by Pee-eye-em, and I next to them; eighteen Snake dignitaries next entered and squatted themselves down on each side of us. Lastly, Pee-eye-em sat opposite to us, with his back to the door, having Ama-ketsa on his right, and another chief on his left; apparently with the intention of keeping out all intruders, and preventing any one from either going out or coming in during the solemn sitting. This completed the diplomatic circle. After which, a silence ensued for some time.

'The great medicine bag was then opened, and the decorated pipe of peace taken out of it; the pipe was then filled, with the usual formality, by Pee-eye-em, who immediately afterwards took a handful or two of sand, with which he covered a small hole by the fireside: then smoothing it over, he made two small holes with his finger in the sand, large enough to hold a goose's egg, one on each side. This done, he then took out of the medicine bag a small piece of wood, shaped like a sugar-tongs, with which he took up a piece of burning horse-dung, and laid it in the hole of sand to his left; resting the bowl of his pipe in the hole to the right, and holding the stem of his pipe all the time in his left hand. He then took up the same piece of wood or tongs, and with it took the burning piece of horse-dung out of the hole to the left and laid it upon his pipe; which was no sooner lighted, than Pee-eye-em taking up the pipe with both hands, drew three whiffs, allowing none of the smoke to escape, but swallowing the whole of it; then taking the pipe from his mouth, he held it vertically each time that he smoked, blowing the cloud out of his mouth on to the stem: this he did three successive times, and each time he uttered a short prayer, as if invoking a blessing.

'Then holding the pipe horizontally, and pointing to the east, he drew three whiffs, blowing the smoke on to the stem as before; then turning it to the west, next to the south, and lastly to the north, he did the same: always observing to repeat the short prayer when he turned the pipe. Lastly, pointing the pipe to the ground, he drew three whiffs, blowing the smoke, as before, on to the stem; signifying that the animosities of war might be for ever after buried beneath the earth. But in all this ceremony, Pee-eye-em did not once, as is generally customary among Indians, hold the pipe to, or blow the smoke, either to the sun or the firmament.

'All this time Pee-eye-em was sitting on his hams; but now rising up, and turning the pipe-stem, he presented it to one of the Cayouses, telling him to touch it with his mouth, but not to exhale any smoke; the Cayouse did so: then withdrawing the pipe for a moment, he presented it to him a second time, with the same positive injunction, which the Cayouse observed. The caution was no doubt intended to

impress upon the Cayouse the duty of reflecting on the responsibility of what he was going to do; for smoking with Indians on such occasions is the same as an oath with us: then putting it to his mouth the third time, the chief said, "You may smoke now;" adding, after he had drawn a few whiffs, "we are now brothers."

'The Cayouse, after smoking, handed me the pipe, but without any ceremony. The smoking then went round and round the circle, with no other formality than that Pee-eye-em always filled the pipe and lighted it himself, with the same tongs as before. The fire was always a piece of horse-dung, till the ceremony on the part of Pee-eye-em was gone through.

'The lodge during this time was like an oven, so that I got up to go out and get a little fresh air; but Pee-eye-em shook his head, and made signs for me to sit down again. I then asked for a drink of water; but Pee-eye-em giving another shake of the head, I had to sit down and compose myself: there we sat, half roasted, half stifled, thirsty, and uncomfortable, until long after midnight; when Pee-eye-em, getting up and opening the door, went out; we all followed, and the ceremony ended.'—Vol. ii. pp. 93-96.

Many of our readers will be astonished at the extent of the journeys performed by the trappers in their annual excursions. On one of these occasions, we are told that the distance travelled was 3430 miles. From the Snake country, which they visited with considerable labor and much risk, they returned with 5000 beaver skins, exclusive of other peltries.

Retiring from his exhausting and perilous labors, our author settled down in the Red River Colony, where the winter endures for seven months, and the mercury sometimes freezes. 'Generally speaking,' he says, 'the isolated position of the colony and its northern and frozen locality, almost preclude the inhabitants from intercourse with the rest of the civilized world; except once a year, when the Company's ship from England reaches York Factory.' Mr. Ross promises a history of this settlement, which we shall be glad to receive, and in the meantime we very cordially commend his present volumes to our readers. Though they relate to a period some thirty years since, and to a state of things which is rapidly passing away, they are full of interest. It is not often that we obtain so competent a guide amidst the vast solitudes of the forest. We are happy to have done so on the present occasion, and invite our readers to share the information we have thus obtained.

ART. IV.—*Reformers before the Reformation, principally in Germany and the Netherlands.* By Dr. C. Uilman. The Translation by the Rev. R. Menzies. 8vo. Edinburgh: T. & T. Clark. 1855.

THIS is not absolutely a new work, having appeared some fourteen years back, but its value and interest are such, that if the Messrs. Clark have erred in incorporating it with the 'Foreign Theological Library,' we doubt not that the great mass of their subscribers will readily to accord them an indulgence in this instance. As a general rule, however, we venture to suggest, that it is highly desirable, on more accounts than one, that the New Series should keep pace with the theological movement in Germany. A decided change for the better in the spirit and tone of religious thought and speculation is in rapid progress there, and we have no doubt that it was with a view to this that the enterprising Edinburgh publishers wisely determined on closing the old series, and starting altogether afresh. They must be well aware that hosts of German theological treatises, which have appeared not more than ten or fifteen years back, are now as completely out of date on the continent, owing simply and solely to their rationalistic bias, as the products of the dark ages. This is not the case with Dr. Ullman's book, and we feel assured that future selections will be equally free from the leaven of the Sadducees. In saying this, we wish to pass no ill-natured censure on the former series. On the contrary, we regard it, in spite of some dross, as a rich treasure of sacred learning, which it would be a sin to depreciate. It gives us the best works of the best writers of the German church as it *was;* and if we would rather have the gems of the fathers of the German church as it *is*, we will not forget that to-day is the child of yesterday, as to-morrow of to-day. Great credit is due to the Messrs. Clark for the steadiness with which they persevered through evil as well as good report in the praiseworthy endeavour to acclimatize on English soil the noble plant of German theological learning, albeit somewhat injured by blight. The generous graft, we venture to say, has already borne good fruit, and will yet yield richer and more plentiful clusters. We hope to see the day when Dr. Cumming will not be looked upon as a great divine, nor such commentaries as Dr. Henderson's be thrown upon an eleemosynary market.

But we are forgetting Dr. Ullman's work, of which we must now give a brief account. It is not, as might be gathered from a too hasty glance at its title, a record of the struggles of those forerunners of the Reformation whose names are in every one's mouth. In the first sentences of his preface, Dr. Ullman guards

against any such misunderstanding, and sufficiently indicates his design. 'W. Gilpin,' he says, 'an English author wrote in his day biographies of Wickliffe, Lord Cobham, Huss, and Jerome of Prague, whom he entitled the *best known* of the Reformers prior to Luther. On the work which I now present to the good will of the public, I might inscribe the very opposite title, and call it, Biographies of the *least known* of those early Reformers. In that case, however, it would be requisite, if proper, to annex that they all the more deserved to be known.' In the present volume, two of these forgotten worthies are made to live again, through the painstaking researches of our author, who has ransacked many dusty MSS., and rare printed volumes, for the interesting materials, which he has so skilfully combined in the masterly portraits before us. These leading figures are John of Goch, and John of Wesel; the former a representative, and a most interesting one too, of those quiet mystics, whose living communion with God taught them to despise the cumbrous externalism of the dominant church system, and whose writings served in so many respects to pave the way for the Reformation; the latter, one of those more active and practical spirits who boldly attacked ecclesiastical abuses and the shameful lives of the clergy, high and low.

The reforming principles of John of Goch, who was born about the commencement of the fifteenth century, and was founder and prior of a nunnery at Mechlin in 1451, are thus summed up by Walch. I. Holy Scripture is the sole fountain and rule of faith, and by it the opinions of the fathers and other doctors are to be judged. II. It is impious and Pelagian heresy to believe, that the natural power of free-will suffices without the help of grace for any work of inward or outward piety. III. They are in a state of sin who fancy that the obligations of Christian virtue can be fulfilled by attention to the various parts of outward ceremonial service, and by will-worship and bodily exercises of various kinds, whilst they are wanting in charity towards their neighbours. IV. The Church may err. V. The doctrine of Thomas Aquinas concerning monastic vows and their efficacy is false and self-contradictory. VI. Predestination does not involve the impossibility of sinning, but the impossibility of final defection, and of perseverance in sin to the end. VII. The sacraments have no virtue *ex opere operato*, but require a certain disposition in the recipients. VIII. The distinction between presbyters and bishops, on which the Romanists insist, was not instituted *jure divino*, but was unlawfully introduced by the Church. IX. Evangelical poverty does not require that a man should have no possessions, but simply that he should wean his heart from superfluity of riches: hence the feigned monastic poverty is contrary

to the laws of Christ. It is truly marvellous that Goch should have been suffered unmolested to diffuse for a quarter of a century such a creed as this, and to live and die in peace. Yet such seems to have been the fact, and it was not until after the adherents of the Reformation began to make use of his writings to further their cause, that they seem to have attracted the attention of the inquisitors. Of the first editor of these marvellous treatises, Cornelius Grapheus, of Antwerp, who published Goch's 'Epislota Apologetica' in 1520, and his book 'On Christian Liberty,' the year after, prefaced by spirited remarks of his own on the necessity of a radical reformation in the church, Dr. Ullmann in his appendix gives an interesting account. Unhappily, Grapheus was subsequently driven through fear of the stake to recant, and sunk into deserved obscurity and contempt.

Alas ! that a similar disgrace should have clouded the last days of Goch's contemporary and coadjutor, the Erfurt professor and doctor of Holy Scripture, John of Wesel. But considering his vigorous attacks upon the corruptions of the clergy, whom he unsparingly lashed from the pulpit, and before the whole world, he could hardly expect to escape the wrath of the dragon, to which, however, he did not succumb without many agonizing struggles. It is even tolerably certain, that his persecutors did not deem the triumph which they had achieved over the old man, wasted as he was by sickness and want, and worn out with long imprisonment, a very complete one, as the vague terms of the recantation wrung from him, and their consigning him to end his few remaining days in the cell of a monastery, sufficiently show. Still his fall demands a tear, and dims his glory as the forerunner of Luther in the great Reformer's own university, where, more than thirty years before the son of the Mansfeld miner was born, he wrote a protest 'Against Indulgences,' scarcely less convincing, clear, eloquent, and scriptural than the world-famous 'Theses.'

It was on occasion of the Papal Jubilee of 1450, that Wesel's remarkable tractate on the subject was composed. The great secular fair for the sale of indulgences had then been instituted just a hundred and fifty years, having been first set on foot by the haughty Boniface VIII., in the year 1300. In a bull, dated February 22nd, in that year, his Holiness, 'in virtue of the divine mercy, with confidence in the merits of Peter and Paul, and from the plenitude of his papal authority,' promises that every one who, in the course of the year 1300, and of every hundredth year to come, shall visit with reverence the churches of the Apostles Peter and Paul in Rome, and there do penance and confess his sin, shall obtain 'not only a full, *but the very fullest forgiveness of all sins,*' it being required in return from every inhabitant of the city that for thirty days in succession or otherwise.

he shall visit these churches at least once a day, and of every foreigner, that he shall so visit them for fifteen days. This proclamation was responded to by the visit of no fewer than 200,000 pilgrims to Rome, and the experiment upon popular credulity having succeeded so well, the interval was shortened from a hundred to fifty years by Clement VI., 'conformable to the custom of the Jewish Jubilee;' and in 1350, the number of the pilgrims rose to 1,200,000. It was in accordance with this ordinance of Clement VI., that the celebration in 1450 was ordered to be kept, although meanwhile Urban VI. had further cut down the jubilee lustrum to thirty-three years. The crowd of devotees which flocked to Rome from all the countries of Christendom was again immense, and at the Secular Games (*Ludi Seculares*) appointed by the pope for the occasion, some hundreds of persons were drowned by the fall of one of the bridges over the Tiber. But notwithstanding the countless multitudes who thronged to the Holy City, ecclesiastical avarice was not sated, and in the next year the indulgence was extended to other provinces of the Catholic world, Germany amongst them.

Here the profitable imposture at once met with the most determined opposition on the part of our reformer:—

'Taking his stand, like Luther, upon Scripture, and upon clear and evident reasons, and applying them as a test to the authority of all ecclesiastical teachers, as being otherwise insufficient of itself, Wesel, with copious citations from Scripture, lays down the following *seven propositions:*

'1. On every one who has infringed his law, God, as lawgiver, and in the exercise of his justice, imposes a penalty, and this penalty he does not remit, although in his mercy he may forgive the guilt; for, as Augustine says, God is always merciful in a way that leaves free course to his justice.

'2. Christian priests, to whom are committed the keys of heaven, are the ministers of God in the remission of guilt.

'3. The penalty which God has imposed upon a transgressor, no man can forgive; for nothing can resist the Divine will.

'4. The Holy Scriptures nowhere state, that any priest, or even the pope, can grant an indulgence which shall liberate a man from the penalties denounced against him by God.

'5. The pope, however, has it in his power to absolve from the penalties which man or positive law has denounced for sin, because the pope is appointed by the Church the founder of positive law, in as far as it subserves the Church's edification, and not its destruction.

'6. That the penalties, which man or positive law have denounced, correspond with the awards of God's penal justice, in such a manner as that when they are annulled, God's justice is also satisfied, is by no means certain, unless it has been revealed by God. For the Divine will (*Wesel*, of course, means in such particular cases) is unknown to man, and nothing is said of this in Scripture.

'7. The opinion of theological teachers regarding a treasure of the Church, accumulated from the merits of Christ and the supererogatory works of the saints, and committed to the charge of the pope, is undoubtedly very pious, but it is at the same time an opinion to which certain modest objections may be profitably made. In particular, it may be objected that the saints have left behind them no such treasure, because the Scripture says, "Their works do follow them." So long as the saints sojourn in this life, their works are by their very nature transitory, and when the saints cease to labour, their works have no independent existence of their own, but, in as far as through the grace of God, they are in any degree meritorious, they follow their authors from the scene of their labours, and enter with them into rest. The works of the saints, accordingly, have no local habitation here below, but are in the place where they who performed them reside. If, during life, the saints earned any merit for others, it was done consonantly with the will of God, who distributes to every one severally as he will. Our merit does not spring from our own will but from God's, and to distribute such merits in the last instance is competent to God alone. If done by a man holding a Divine commission for the purpose, it can only be done in virtue of some agreement entered into between God and him, such as the teachers maintain is the case in regard to the sacraments. But that any such agreement has ever been made by Jesus with the ministers of the Church is not stated in the Gospel.

'These propositions comprise the substance of *Wesel's* sentiments upon indulgences.'—pp. 260, 261.

If, as cannot be denied, there is much that is defective and immature in these sentiments, especially in the concessions made to papal authority, this is only what may be said of Luther's 'Theses.' Moreover, if we miss in Wesel's statements any hint of the material principle of the Reformation—viz., the doctrine of justification by faith, which the 'Theses' certainly do embody, at least by implication, it must not be overlooked, on the other hand, that Wesel has the advantage of Luther in the prominence which he gives to its formal principle, the authority of Scripture, which we see is with him everywhere decisive. Of course we do not mean to insinuate that the earlier reformer could have done the work of the later, or wish at all to detract from the well-earned fame of

'The solitary monk who shook the world.'

But, whilst utterly repudiating any such idea, it is still fairly supposeable that Wesel's writings were not without their influence on Luther's mind and opinions, especially on the question of Indulgences. It is hardly possible that his treatise on that subject should have lain in the library at Erfurt, without attracting the notice of the author of the 'Theses;' and with respect to Wesel's works in general, we have Luther's own acknowledgment that he studied them. It is Dr. Ullman's judgment also, that

Luther owed not a little to his predecessor in the warfare against Indulgences.

Besides attacking this monstrous abuse, Wesel was very caustic in his censures upon the corrupt clergy of the age, from the pope downwards. His book upon 'The Authority, Duty, and Power of the Pastors of the Church' is written quite in the spirit of another Ezekiel. Dr. Ullman gives us a copious analysis of it, with the more important passages in full. Several of these we would gladly transcribe if space permitted. As it is, we content ourselves with a single specimen, which, whilst it shows how little Wesel was dazzled with the nimbus that surrounded the tiara in his days, serves also to confirm the view given of his profound reverence for the Word of God as the sole rule of faith and practice.

'The papal title,' he says, 'the reputation of scholarship, and the fame of science are purely personal things. All that such masks and spectres write and command, can be regarded as true only in as far as the word of God prescribes, which word alone the Lord commands us to hear. The apostle Paul himself claimed the belief of men solely for the sake of the Gospel entrusted to him by God, not on account of his person, and not for the weight of his name. Even he aspires to no more than to be a minister, apostle, and herald, and glories so little in what he suffers for the Gospel, that he declares it to be folly to speak of his labours. Before such a pattern, let the flatterers, whom the Bishop of Rome permits to honour him with the titles of "Holy" and "Most Holy" be silent, and not breathe a word. Let the truth of the Gospel be proclaimed, and the work of faith extolled, and then we shall bow the neck to Christ, and to the pope as Christ's ambassador and faithful servant. That which Christ says, "The word which ye hear is not mine, but the Father's which sent me," ought the pope also to be able to say. He only who teaches the word of the Lord, he only who, with insight and skill feeds the flock, is a true apostle, a shepherd, and bishop, according to God's own heart. But the man from whom I hear nothing of Christ's righteousness, and in whom I perceive no insight and knowledge, I refuse to confess as a master, I own not in him the authority of a bishop, nor reverence him as a pastor. What then remains but that all such are dumb idols, serving only their belly and not Jesus Christ, nominal shepherds and mere titular bishops, who by vain semblance and outward pomps, miserably impose upon the people. I care not, however, for the two-horned mitre. The shining infula affects not me. I abominate the priestly slippers decorated with precious stones and gold. I laugh at the high-sounding names, the tragic titles, the lofty triumphs. They are mere semblances, and anything rather than the badge of a true pastor, bishop, or teacher, when that is lacking which alone gives them worth, and renders them tolerable.'—pp. 318, 319.

In addition to the principal portraits, Dr. Ullman has introduced, by way of episode, several charming miniatures of accessary

personages, who, although not in the eminent sense in which the application belongs to John of Goch and John of Wesel, were yet in their way, and according to the measure of light which they enjoyed, Reformers before the Reformation. Amongst them may be mentioned Sebastian Brant, the author of that famous satire, 'The Ship of Fools,' Gregory of Heimburg, the zealous defender of German nationality against the encroachments of the papacy, and Jacob of Jüterbock, who, born in the same town in which one hundred and thirty-two years afterwards friar Tetzel opened his commission as a seller of indulgences, and labouring in the same university in which Wesel taught and Luther received his education, was a bright witness of evangelical truth before the earlier of these other luminaries rose above the horizon. Nor should Matthew of Cracow, the reforming Bishop of Worms, be forgotten. Upon all these men there is no doubt the writings of our own Wiclif had produced a great impression either immediately, or mediately, through the Hussites. We should have been glad to see this point brought out more clearly by Dr. Ullman, instead of being touched upon only incidentally. But it is only very recently that the German *literati* have begun to make themselves acquainted with the masterly works of Vaughan and Le Bas upon the greater Luther of England. We are happy to find that at last their fame has reached the continent, where they are beginning to be appreciated at least as much as they are at home, and where they will hardly fail, we hope, to awaken such an interest in our neglected reformer, as shall re-act upon ourselves, and force us for very shame to rescue his writings from the rats, and print them at least for posterity, if not for the present generation.

ART. V.—*Souvenirs d'un Naturaliste. Par A. de Quatrefages, Membre de l'Institut (Académie des Sciences). Deux Tomes. Paris: Librairie de Victor Masson, Place de l'Ecole de Médecine.* 1854. [Recollections of a Naturalist, by A. de Quatrefages].

2. *Leaves from the Note-book of a Naturalist.* By W. J. Broderip, Esq., F.R.S., &c. London: John W. Parker & Son.

WHEN a naturalist sits down to write his reminiscences, he subjects himself to the full force of the censure directed by the Roman poet, Horace, against the author who tries to write about everything, and a few other things besides. But, in fact, the censure need trouble him little, for no well-grounded fault can be found with an author for the choice of any topic he pleases, or

as many themes as he chooses, provided he has anything to tell, and knows how to tell it well. The only unpardonable literary delinquency is to have nothing to say. 'Nature is the servant of man,' and the naturalist especially is in this sense the master of nature. Natural history, which is repulsive in the form of reports, dissertations, and treatises, is popular when presented in voyages, travels, and reminiscences. The public hope by their means to enter into the pleasures, and escape the difficulties of the study of nature. How often have we heard expressions such as these! 'I should be delighted to study natural history, but I cannot remember the crack-jaw names; I cannot afford the expense of specimens; and, to tell the truth, I sometimes don't see the use of it.' The public in Europe have long been of the opinion respecting the pedantic naturalists expressed by Voltaire in regard to Buffon, and in point of fact, the criticism applies with greater justice to the naturalists of the nineteenth than against their predecessors of the eighteenth century. Buffon had laughed at Voltaire for saying the sea-shells found on the mountains might have been dropped by pilgrims from their hoods on returning from Palestine; and Buffon was right in his ridicule, but he had not more reason on his side than Voltaire had in one of his retorts. When they were talking to him one day about Buffon and natural history, he replied, 'Not so natural,'—*pas si naturelle.* If they expressed serious opinions, the persons who doubt the utility of the natural sciences would be inexcusable, for they would show themselves to be ignorant of their own nurriture, their own apparel, their own homes, and their own bodies. All they mean, however, we suppose is, to protest against the disdainful neglect by certain naturalists, from false notions of dignity, of the beneficial and practical applications of the sciences. The objections to the nomenclature of the sciences which treat of animate and inanimate bodies are perfectly well founded; since nothing could be more dark or harsh than this constantly multiplying pest of ugly words. 'It is the plague of darkness upon man, upon beast, and upon every herb of the field.' Most completely have his successors merited the condemnation which Buffon himself pronounces against those who, by trying to reduce nature to their little systems, and by multiplying words and methods, render the language of science more difficult than science itself. The knowledge of stars, plants, and animals, is for him who has once fairly entered into it, a world of grand, wonderful, and beautiful things. It is the knowledge of our earth, this shell of quartz and feldspar, with its sea of fire raging within it, and its ocean of water rolling around it. It is the knowledge of the universe, from the star upon which we live, onwards to the planet whose existence has only just been

revealed by the latest calculations of astronomy. Natural history is the knowledge of life, the meanest form of which is more surpassingly wonderful than the most glorious sidereal combination in all the heavens. But three monsters beset the gate of natural history—Terminology, Expense, and Impracticability. Most assuredly it is profoundly to be regretted that the makers of systems should have erected at the very threshold of this temple of knowledge, a barrier of difficulty and disgust comparable only to the gate which Milton places at the entrance of his Pandemonium, for the slowness with which it turns, and the barbarous dissonance with which it grates on the ears of men.

The oldest and newest great classifications of nature are the same. Aristotle divides nature into animate and inanimate; and the moderns repeating the same thing, and lowering the idea of life down to the idea of organization, arrange bodies as organic and inorganic. Linnæus, while deriving his classification from the alchemists, who divided the empire of nature into three kingdoms, stones, plants, and animals, has retained, oddly enough, with all modern naturalists, the notion of kingdoms long after the kings have all been dethroned by the revolutions of science. It would now-a-days be deemed a metaphorical puerility to speak of gold as the king of metals, the vine as the king of plants, and man as the king of animals; although we retain still in our books the three kingdoms of minerals, plants, and animals. The alchemists rejected the great Aristotelian classification founded on life, because they asserted the growth, vegetation or animation of stones. As for the Tri-une classification, they seem to have adopted it out of respect to the theological doctrine of the Trinity. 'The creature is the image of the Creator,' says Colleson; 'there are three worlds, and these three are one.,'

Certain German authors who retain the notion of kingdoms without kings, recognise four kingdoms in nature—the mineral, vegetable, animal, and *hominal*. They are expressed by the four Latin words—*esse*, *vivere*, *sentire* and *intelligere*: the mineral is, the plant lives, the animal feels, and man knows. This classification expresses a natural reaction and a just repugnance against Linnæus, who calls the orang-outang the man of the woods, or *homo sylvestris*. In the new classification man forms a whole kingdom of himself, and the unity of his races in one sole species having been demonstrated, he is both the king and the kingdom rolled into one; and in a different sense from that of the song he may sing—

'My mind to me my kingdom is.'

Some of the most curious things in the volumes of M. de Quatrefages relate to the natural history of man. There are

two kinds of men, however, of which no Frenchman can give an account, — the Frenchman and the Englishman. There is nothing more incredible than the natural histories of the Englishman which have been written by Frenchmen, except the fabulous accounts they have published of themselves. M. de Quatrefages, a man of superior acquirements and intelligence, for instance, believes and publishes that the English and Portuguese troops, on taking St. Sebastian, on the 31st of August, 1813, fired upon several persons who were waving handkerchiefs on the balconies in celebration of their triumphant entry. It is a strange fact, a curious sign of the malady, that this scientific academician has no other proof to give of such an extraordinary statement than his having found it in an *ex parte* manifesto! When at Inkerman, Russian officers were accused of finishing the wounded on the ground, the accusation was brought home to one of them, the testimony against him was recorded, and his condemnation establishes the fact according to the scientific principles of legal evidence. The friends of the English could have no motive for refraining from making their complaints to Lord Wellington against their assassins. Who was the English officer condemned for this outrage? Who were the friends of the English who complained of it? Can M. de Quatrefages name a single witness who went before a magistrate and said: 'I was waving a handkerchief at such an hour, on such a balcony, and was fired at by the English soldiers I celebrated?' If in matters of science, M. de Quatrefages were not more intelligent in regard to the evidence necessary to certitude than he is when publishing accusations against the English, his work would not have been worthy of our notice. We state the St. Sebastian affair as an illustration of a national malady, of which he is one of the victims. Let us complete it, and then pass to fresher and more amusing topics. M. de Quatrefages writes in perfect good faith; he believes what is said by the manifesto; yet he proves it himself to be unworthy of a particle of credence. The authors of it, whom he calls the civil authorities, retired to Zubieta, and thence made a solemn appeal to Lord Wellington, and the Spanish regency and congress, and the whole of Europe, on the grounds stated in their manifesto, and on behalf of fifteen hundred families, without homes, without clothes, and without bread. Europe supplied them with one subscriber, a German merchant living at Bilbao, who gave them half an ounce of gold! There can be no better proof that nobody believed a word they said. The credulity of M. de Quatrefages is of rare growth, and springs up less readily when it implies that good people may have to part with their money than when it merely involves the patriotic duty of hating one's neighbours.

Destitute of the testimony necessary to establish this calumny, M. de Quatrefages is, however, provided with a principle upon which he bases it. He derives it logically from a French idea of the nature of the Englishman. 'Certainly,' he says, 'they did not obey an instinct of gratuitous barbarity which is not in the least in the character of their nation.' He finds the solution in the passion for commerce which maddens British generals! 'It is always,' he says, 'that implacable policy which we find at the bottom of all the acts of England, and which would make her burn one half of the world to be alone to sell cotton to the other half.' This curious case of Anglo-phobia was published in Paris eight years after England had proclaimed her policy of commercial freedom and equality with all nations; and three years after the Crystal Palace in Hyde Park had presented a miniature picture of it to the representatives of the whole intelligence of the age.

Ethnologists who have studied the characteristics, origin, and distribution of the races of mankind, such as Pritchard and Humboldt, have been particularly struck, and much occupied by the Basques. Saint Sebastian is one of the centres of this population, who own no kin with any other European nation, and whose origin is one of the most difficult puzzles in ethnology. They call themselves the Euskaldunac, or the cunning hands. Their ancient fables commence with the destruction of a former world, from which only a few solitary men escaped, like olives on the tree after harvest, or grapes on a vine-branch after the vintage. Of the number were Aïtor and his followers, their ancestors, who lived a year in an inaccessible grotto, whence they saw the water and fire at their feet disputing for the mastery. When they descended into the plains they remained faithful to the worship of one God, the Lord on high, as taught them by their ancestors of the mountains; and their old men offered up sacrifices of fruits, under oak trees, where they made laws and administered justice. Death they regarded as the bed of a long sleep, and they believe in a future state of rewards and punishments. They pretend to have been one of the first of the nations which became Christians. They say their language is as natural to the human race as cooing to the dove, barking to the dog, or roaring to the bull. William von Humboldt thought that it could not be connected with any of the languages of the Indo-Germanic family, and its grammatical structure approaches some of the American languages. Some words of it have been found by the Abbé de Hiarce to be identical with words found in a vocabulary of the language of Van Diemen's Land. Foreigners find it almost impossible to acquire the Basque language. Nouns, pronouns, and adjectives, change into verbs, and the verbs metamorphose themselves into nouns and adjectives. Prepositions, adverbs, conjunctions, inter-

jections, and even the characters of the alphabet, are declined like nouns and adjectives, and conjugated like verbs. Every noun has six nominatives and twelve cases, and the adjectives have twenty cases. The noun changes often according to the state of the being, or the thing which it signifies. What would be said in French in a single verb is represented in Basque by thirty-six verbs, each of which expresses a modification either of the action, or of the being or thing which is the object of the action. There are besides four different conjugations, according to whether the person addressed is a child, a woman, an equal, or a superior. The Basque learn French or Spanish easily, but neither the French nor the Spaniards can ever learn the Basque language.

Everything seems to confirm Mr. Prichard in his opinion that the Basques are an aboriginal race, who formerly occupied extensive territories which they no longer possess. In their language we found the etymologies of a great many names of places, rivers, mountains, provinces, of Italy, France, Spain, and the Mediterranean islands. It was Leibnitz who was the first to show the importance of the names of places, from the difficulty with which they change, in discovering the traces of ancient populations. The Basques were expelled from their territories by the Ligurians and Celts, especially the latter, who drove them for shelter into the wildest passes of the Pyrenees. Protected by the mountain fastnesses they found there, they formed themselves into several little republics, and bravely and successfully maintained their independence. Carthaginians, Romans, Goths, Francs, Saracens, have successively attacked, and temporarily or nominally subdued them, but they have always hitherto preserved their nationality, manners, customs, and language. When discomfited for a time they have always been ready to seize every opportunity to regain their complete independence. On several occasions they have displayed heroic valour against their invaders. Their institutions having been zealously preserved, they present in the middle of the nineteenth century a society with nearly all the features unaltered which they wore during the middle ages.

The privileges of the Basque provinces have become celebrated under the name of *fueros*, and they regulate their internal affairs and their connexion with the crown of Spain. The king of Castile was their sovereign, and in case of invasion they were bound to rise *en masse*. They paid scarcely any taxes. No fortresses could be erected in their country; and the king himself, when he entered it, was obliged to leave, with the exception of a small escort, all his soldiers behind him. The province was in reality a federal state, composed of a number of little republics, governed by their Alcades and their Ayuntamientos. Every

town and village was independent. Every republic was represented in the assembly of the province, to which was reserved the right of imposing taxes and the duty of preserving their *fueros*.

To be eligible to sit in this national assembly it was sufficient to be a Basque proprietor. The feudal hierarchy, as it was found everywhere else in Europe, has never existed among the Basques. The Guipuzcoans, it is true, enjoyed in Spain the rights of nobles, and certain towns of Biscay and Alava conferred them on their inhabitants; but these were only exterior privileges, and were of no value in the Basque countries. The highest titles which could be conferred by the kings of Spain on certain families did not establish any real distinction in their favour among their fellow-citizens. In Guipuzcoa, in Biscay, and in Alava, the constitution recognised neither nobles, nor marquesses, nor dukes; and, on the other hand, no one was of mean birth. To be eligible to take part in the deliberative assemblies, or in the administration, it was only necessary to be the master of a house, and this quality, attached to the possession of soil, was transmitted with it. A stranger, however low his birth might have been, on buying land acquired this title, and could take in addition, if he pleased, those of noble, gentleman, or hidalgo, which the Basques considered as only the equivalents of the first.

The master of the house enjoyed no other privileges. All professions were of equal rank, and none of them were deemed mean. When the municipality gave a ball at Saint Sebastian, they invited nobody; they simply announced the ball, and anybody might come to it who liked. Insolent commercial manners have spread in recent times. Nevertheless, M. de Quatrefages has seen counts and tailors figuring away at a public ball in the same country dance. Since the war against Don Carlos, the Spanish soldiers, acting as gendarmes, have been introduced into the three provinces, and the Customs have been extended to the frontiers of France. When the Alavaise, Biscayans, and Guipuzcoans fought for Don Carlos, what they really meant was *Viva los fueros*. Occupied with their own affairs, in which every man takes the part of a free citizen, they have never been troublesome to their neighbours, neither oppressed nor oppressors, neither conquered nor conquerors. The contrast between great riches and great poverty is seldom seen in their country. They are generally in easy circumstances. From the time of the middle ages they have occupied themselves in the whale fishing, and have been hardy sailors. They are a very beautiful race, with round skulls, large foreheads, straight noses, finely formed mouths and chins, an oval face, narrowing towards the chin, large black eyes, black hair and black eyebrows, brown complexions, slightly coloured, and small, well-formed hands and feet. In public

assemblies at Saint Sebastian, for one plain person there might be counted twenty or thirty truly handsome. The beauty of the ladies warms the style of our scientific academician into eloquence. It is a principle of ethnology that the characteristics of a race are always more marked in the women than in the men. 'Their faces regular and animated, their large eyes full of expression, their mouths almost always open, with a slightly mocking smile, their long hair falling in tresses to the knees, or rolled round the head like a natural crown, strike the least attentive observer. Nearly all have necks and shoulders remarkable for the purity of their lines; and this rare trait of beauty gives to the humblest peasant a something noble and graceful which might be envied by a duchess. I do not exaggerate: there is in the gait of these *aguadoras* in rags, carrying on their heads heavy pails of water, the ease and almost the majesty of Diana the Huntress.' M. de Quatrefages never saw in the village *fêtes* of a Sunday the two sexes dancing together. The women danced together, while the men played at tennis ball and ninepins. From their proud and courteous air and brilliant costume, M. de Quatrefages calls the Basques a nation of nobles. He records, however, an odd trait in the manners of these proud, black-eyed, magnificent fellows. When one of their wives has been confined, she gets up as soon as possible, and attends to the care of the household, while the husband takes to bed with the new-born baby, and there receives the congratulations of his neighbours. We leave the whole of the responsibility of this statement to the learned academician. This custom, according to Diodorus of Sicily, once existed in the Island of Corsica; there are traditions of it among certain Scythic tribes called Tibari, on the banks of the Euxine; and it is said to be found among certain aboriginal American and African nations. The male frog (Alytes obstetricus), the *crapaud accoucheur*, who undertakes the maternal duties by retiring, with the new-laid eggs around his abdomen, into a solitary place in the pond or ditch, and hatching them, is certainly a zoological curiosity, but he must yield the palm of singularity to his human *analogues*. The Basque highlander seems to have inherited a custom even more curious than this Batrachian instinct. M. Chaho traces this peculiarity of the Basques to an incident in the life of their ancestor Aïtor; but the origin of the 'hominal' custom, and the explanation of the Batrachian instinct, are alike unknown.

But enough of the accoucheur Basque. All races who are too conservative, who refuse to mix their blood, mingle their ideas, and blend their customs, with those of other races, seem doomed to perish. There is in nature an analogous process. While the Americans destroy the Red man, the English the Kafirs, the Russians the Turks, the Chinese the Tartars, there is

a war of extermination waging in Europe between the grey rats and the black rats. For centuries, the mouse was the only mammal of the rat kind known in Europe. The ancients knew no other. Man sought the help of cats against his redoubtable though timid and little enemies, the mice. Buffon says this was calling in the help of one enemy to suppress another, which is more inconvenient;—a view of the character of cats which has been resented ever since by nearly all the ladies who have read him. During the middle ages, the black rats, coming from nobody knows where, spread themselves over Europe. They have warred against the mice ever since, who owe their preservation to their small size, which enables them to retreat into holes too narrow for the admission of their pursuers. About the beginning of the last century, the grey rat arrived in Europe from India, having been brought in merchant ships. It appeared in England in 1730. When Buffon wrote, it was only known in France, in the environs of Paris; and had not entered into the city. In a few years it overran the whole of France. Stronger, fiercer, more fecund, and swimming well, the grey rat soon mounted the rivers and streams in pursuit of the black rat, which it destroyed. Now-a-days the black rat is only to be met with here and there, in a solitary grange in the interior, or a lonely island on the coast, where it has found a refuge.

This fact of the war of extermination waged by races of animals against each other, and the influence of man as the great destroyer of every kind of creature or thing which he finds or fancies hostile to him, have not had their due weight on the authors of theories of the history of life on the globe. Sound induction, nevertheless, requires the exhaustive consideration of all known and real causes in actual operation, prior to having recourse to the imagination for guesses. When the authority of Aristotle, Leibnitz, Buffon, and Bonnet, made the idea of a chain of existence the prevalent one, poets and popular writers said the loss of a single species,

'The least link in being's wondrous chain,'

would be equivalent to a derangement of the universe. Bernardin de St. Pierre says, 'The harmony of this globe would be destroyed, in part if not in whole, if they suppressed only the smallest species of plant; its destruction would leave without verdure a certain space of earth; and without nurriture a certain kind of insect that lived on it. The annihilation of these insects would entrain the loss of the kind of birds who nourished their little ones with them; and thus, in succession, to infinitude. The total ruin of the kingdom might issue from the destruction of a moss, as we see that of an edifice commenced by a lizard.'

Cuvier and his disciples, on the contrary, fall into an exaggeration on the other side, which is probably equally excessive; for they say the living species are greatly outnumbered by the lost species. One of them has estimated the living species of fish at five thousand, and the fossil species at twenty-five thousand! The number of extinct species of turtles already obtained from the Island of Sheppy alone, it has been said, exceeds the whole number of the species of tortoises or animals in shields (or chilone) known to exist throughout the globe. The school of Cuvier pretend that the sedimentary rocks are not merely a sort of petrified grave-yard of plants and animals, which have individually come under the dominion of death; they would have us believe them to be a museum, in which have been preserved the remains of numerous species of animals which no longer exist. The whole of these hypotheses rest on the anatomical authority of Georges Cuvier, which has received such shocks of late, and now-a-days has but little weight in Paris, where it is best known. Professor Schlegel, of Berlin, recently proved that Cuvier was cheated by a German country surgeon, in regard to one of his great extinct reptiles! Zoological research is continually showing how little is known of what actually exists, and anatomical investigation is proving daily the identity of living with what have been called extinct species; and as knowledge increases, the presumption of the men becomes more and more apparent, who pretend to know what exists and what is extinct in the immensities of nature. The whirligig of scientific opinion promises a return to something like the sentiments of the poets whom we find quoted by Mr. Gosse in his popularly written and beautifully illustrated 'Aquarium':—

> 'From Nature's chain, whatever link you strike,—
> Tenth or ten thousandth,—breaks the chain alike.'

and, again, from Stillingfleet:—

> Each shell, each crawling insect holds a rank
> Important in the plan of Him, who fram'd
> This scale of beings; holds a rank, which lost,
> Would break the chain, and leave behind a gap
> Which nature's self would rue.

M. de Quatrefages indulges his imagination in the formation of a perfect animal. 'The perfect animal, if it could be in this world, ought to unite the rarest qualities which are disseminated among a great number of different species. It ought to move upon the earth with the security and swiftness of a zigetai, the wild horse upon which the Monguls mount the god of fire. It ought to be able to cleave the air like the martlet, and sustain its flight like the pelican, which are met two hundred leagues

from all land, and can fly four hundred leagues without resting a single instant its wings, whose length prevents them from reposing upon the surface of the waters. The perfect animal ought to be able to dive to the depths of the seas, and cleave their stormy waves with the rapidity of the dolphin and with the perseverance of the shark, which follows a ship from Europe to America, making, without stoppage, a voyage of eight or nine hundred leagues, the windings and tackings of which treble or quadruple the distance. To these faculties of locomotion, it ought to add the force of the elephant or the whale; the infallible scent of the pointer; the delicate touch of the bat; the fine ears of the mole; the piercing glance of the condor, which, hovering above the Cordilleras, discerns the smallest prey browsing on the plain four thousand metres beneath him. For attack and defence, it would combine the formidable claws of the tiger with his terrible jaws; the impenetrable cuirass of the crocodile with the envenomed teeth of the rattlesnake and the cobra di copella; finally, all these divers attributes ought to be found together in a body in which the grace of the kitten should be found in alliance with the majesty of the reposing lion, while displaying the brilliant colours of the humming-bird and the bird of paradise.'

Although poets have praised each other for exhausting worlds and then inventing new, the creative fancy has never yet appeared among the endowments of men which could exhaust the idea of perfect animality. The creation of our learned academician is very bizarre and very incomplete. The principle upon which animals are coloured, striking exceptions apart, is harmony with their habitats, with modifications adapted to climate; sober colours in the winter time, and brilliant beauty in the love season. The pigments in the epiderm of the perfect animal ought, we submit, to adapt themselves to the moods, lights, and shadows, habits and habitats of the animal. Wood bugs have the hues of the bark and lichens upon which they live; green insects are found among the green grass and leaves; and just as there are beetles undistinguishable from the withered leaves among which they crawl, and caterpillars in the gooseberry-bushes motionless as their withered twigs, the giraffes and cameleopards resemble the weather-beaten trunks of the forests, and the grey of a herd of elephants is mistaken by unpractised eyes for the grey of the thorny jungle.

Another serious omission from this creation is the protection of the tortoises as apostrophized in the Greek proverb—

'O tortoises! happy in your hides.'

Why not, since we are about it, give the perfect animal the

power of enclosing himself in a box? The type of a chelone is an animated box. No naturalist has surpassed the old nursery book in the description of it:—

> 'The tortoise securely from danger does dwell,
> When he tucks up his head and his tail in his shell.'

Some enclose themselves by drawing in their heads; some by folding in the necks; there is a kind with a lid in front, another kind with a lid behind; and again, a kind with a lid at each end. Our perfect animal ought surely to be made happy in such a shield-like box.*

Longevity is another quality which must not be omitted. Brisk young tortoises, three or four centuries old, feed at Galapagos upon cactuses which have been growing for a thousand or a couple of thousand years.

However, the greatest omission from the conception of the perfect animal is of its sociability, which fits animals for domesticity and the service of man. The perfect animal ought to be tameable. Vast as are the services man derives from the lower animals, they are probably insignificant in comparison with what

---

* *Apropos* of tortoises and turtle, no Londoner can help thinking of aldermen, and Mr. Broderip relates an anecdote of Chantrey the sculptor and a civic functionary at a feast on green turtle, which is too good to escape quotation:—'Our own lamented Chantrey, who, though fully alive to the merits of the good things of this world, was one of the most unselfish and liberal of men, had a story of a passage during one of the City feasts at which he was present. The great national sculptor—for truly great and truly national he was—sat next to a functionary before whom stood a large tureen of turtle-soup. This citizen instantly possessed himself of the ladle, carefully fished out the coarser parts, and offered the plate containing them to Chantrey, who declined.

'"I watched," said he, "the progress of the plate: at last it was set down before the Lord Mayor's chaplain; and the expression of that man's face, when he beheld it, I shall never forget." The functionary went on helping till he had cleared the soup of all but the green fat and richer parts, the whole of which he piled up in a capacious plate for himself. Then up spoke our sculptor, and said, "If you will allow me to change my mind, I'll take a little turtle;" and the waiter, who held the plate, placed it, to the horror of the dispensing expectant, before Chantrey, who immediately commenced spoon-exercise, as Jonathan delicately describes such evolutions; "and this I did," said Chantrey, "to punish him for his greed."

'What was our unhappy functionary to do? His own tureen was exhausted, and, in a half frantic tone, he called to one of the waiters to bring him some turtle. But at City feasts the guests are very industrious, especially when turtle is the order of the day; and the waiter, after trying about, brought back to our greedy citizen the identical plate of fatless flesh which had so astounded the chaplain, who had contrived to exchange his unwelcome portion for one more worthy of a sleek son of the Church: "and then," Chantrey would add, "my attentive neighbour's visage was awful to look upon!" There was no help for it; so the disconcerted functionary betook himself to the rejected plate, with the additional discomfiture of seeing Chantrey send away his, still rich with calipee, fat, and fins.'

will in future times be obtained from them. All animals sociable among themselves, it is probable, may be domesticated. The Chinese fisherman sends the cormorant, with a string round its neck to prevent its swallowing the prey, away to fish for him, and has taught the bird to fear his bamboo cane if it is idle, and to feel pleased if applauded when it is industrious. The dog is a wolf. There is no difference between the anatomy of a wolf and a dog. They reproduce together freely, voluntarily, and continuously; and this is what physiologists mean by species. Gratitude in the dog, fear in the wolf, moral and not zoological differences, inspire the fidelity of the one, or excite the ferocity of the other, and make the dog a friend and the wolf an enemy of man. 'The wolf in his midnight prowl' is the kindred of the sheep-dog who protects the fold. The differences between the effects of good living and hunger during successive generations, and the hereditary transmission of qualities once acquired, will be found to explain probably all the differences which exist between the house-dogs which protect the homesteads of France and the flocks of wolves which every winter spread terror from the Alps and the Pyrenees up to the very gates of Paris.

The function of perforation is one of the most wonderful faculties of animals. It is the most incredible feat of nature in accomplishing great effects by small means. The researches of M. de Quatrefages in the neighbourhood of Saint Sebastian gave him opportunities of studying the *teredo navalis*, which the French naturalists call *le taret*, and British sailors the 'ship worm.' There are several varieties of the ship-worm, at least half-a-dozen of which are British. Just now, when we have a fleet in the Black Sea, which is infested by the ship-worm, its kindred, the pholades, and its associates and allies in destruction, the sea fleas (*chelura* and *limnoria*), the subject is of vital importance to the interests of the maritime powers engaged in the war. Every account we have ever read of the Russian fleets at Sebastopol, has described the vessels of it as weakened and rapidly destroyed by these pests of the seas. In the last century, Holland which braved Spain when strongest, and whose navy once invaded the Thames with a besom at the mast-head, was in danger of inundation from the ravages of these small but terrible enemies, in destroying the piles upon which it is built. Prior to the coppering of the bottoms of ships, it sometimes happened that they went into pieces far at sea, under the feet of the sailors and passengers, without giving the slightest warning of the catastrophe. The Turkish, British, and French fleets at Balaklava and Chersonese, are now exposed to the insidious enemies, long so fatal to the Russian ships; and will have to sustain attacks, more persevering, more perfidious, and therefore still more perilous,

than the hurricanes of the Euxine or the artillery of Sebastopol. A slight idea of the practical importance of the study of these shellfish and crustaceans may be derived from the consideration taught by experience to the maritime nations, that it is cheaper and better to sheath the bottoms of their ships with copper, or as if it were with half-pence, than to run the risk of their ravages. This expensive defence, however, has been found to be an insufficent protection; and one of the most important questions of practical science in the present day is how to find more efficient remedies for the evil.

Perforation, boring, piercing, or excavating, is the most curious operation in the animal world. Most kinds of animals make holes. Blainville imagined a classification based on form, extending from man the most perfectly formed animal, downwards to the sponge the nearly formless animal; and in almost every link of this multiform chain, kinds of animals exist, which perforate without exception, even of the last and lowest of all, the sponge, one species of which in the silicious group has acquired the name of *spongia terebrans*, or the boring sponge, because it corrodes the stones to make a lodging for itself. Without mouth or intestines, and having for its envelope only a very soft and glutinous membrane, the boring sponge penetrates and corrodes the shells of molluscs, especially oysters and the hardest calcareous stones. These stones are riddled with labyrinthine holes; and they are holed in every direction to such a degree, that at first sight they might themselves be taken for petrified sponges. Animals perforate all kinds of substances, animal, vegetable, and mineral, bones, tissues, horns, skins, woods, and granite. Indeed, larves of insects have of late years been proved to have perforated the lead of roofs and the metal of the steel and copper plates of engravers.

The object of the different animals in their perforations is either to find food or lodging, or a place of security for their eggs. A Californian woodpecker, however, which Sir William Jardine proposes to call *picus providens*, the provident woodpecker, a black one, with a red head and yellow throat, has been described of late, which is said to hammer out holes in the bark of trees to store acorns in them. They are even said to prepare holes during the summer to be ready for the acorns in the autumn. The statement needs confirmation. This is, we believe, the first time such a high instinct as foresight and providence, rare even among the human species, and found in few mammals, has been ascribed to birds. If the observation should be confirmed, it would give an additional object to the zoological perforation—namely, the storing of food. We should be obliged to correct our statement, and to say animals perforate to obtain food and lodging,

and to depose their eggs and store their provender. In pursuit of these objects, animals of such apparent insignificance as to be popularly called fleas, flies, grubs, worms, and the like contemptuous names, destroy harvests, breakwaters, piers, forests, towns, navies, and nations.

The ship-worm is called, in Cuvierian terms, an acephalous mollusc, a headless soft-bodied animal, words which have come into vogue all the more readily, that nobody has defined either what is a soft body or what is a head. As for this present writer, he has spent too many pleasant months in the society of these shell-bearing creatures to venture to say they have no heads. The word 'teredo' is a Greek and Latin word, signifying the wood-worm ; and Linnæus, adding an adjective to the substantive, which means naval, describes the animal as the *teredo navalis*, or wood-worm of ships. Lamarck includes them in 'les conchifères demiaires tubicolés'—or inhabitants of a tube, bearing shells, which have two muscular impressions within each valve. M. Deshayes calls the ship-worm a 'pholadaire,' or creature hiding in a hole like the pholades. The ship-worm seems a white-greyish worm, about a foot long, and half an inch thick, with a round end, and a forked end. The shell consists of two small valves, about the size of a nut. Within the valves is what the French naturalists have called 'un cuilleron' or small spoon, and the English a 'spoon-shaped process;' but which we have demonstrated with general acceptance in France and England to be a veritable lever. [See Jameson's 'Edinburgh Phil. Mag.' for July, 1851, and 'Eclectic Rev.' for December and August, 1853.] Outside the valves are the teeth of a rasp, as in the other pholades. The foot of the *teredo navalis* is at the bottom of the tube and hole it makes in the wood, and the levers are inserted in the muscles of it. Two syphons form the opposite end of the ship-worm, which communicate with the sea. Like the pholas, the teredo is a rasp, and grates down the wood in making its hole: like the pholas also, the teredo is a squirt, and rejects through the anal syphon the wood dust. The foot acts as the motor of the rasp through the levers of the valves; and by its expansibility as the piston of the squirt. Such is this animated perforating machine. In the elongated form of the teredo, the liver, ovaries, and gills, are not placed beside each other, but the one after the other. We know not whether the kinds of ship-worms in the Black Sea consist of those who spawn in spring or in autumn. If the public accounts of the Russian fleets are true, the spawning season of these animals occurs when it may be a dangerous time for our navies of war and commerce. Their reproduction is involved in much obscurity. The reproductive characteristics, the fecundation, and the spawning of these crea-

tures, have never yet been described or seen, we believe, by any observer. Probably, the young are deposited in a gelatinous mass upon the adjacent surface of wood as the pholades are upon the rocks, according to our personal observation; and after a certain time, each individual separates and shifts henceforth for itself. All animals undergo metamorphoses; the metamorphosis of the insect into egg, larve, chrysilade, butterfly—or of the frog into eggs, fish, quadruped—or some other not yet sufficiently observed, such as the alternate generations of salpa, in which the single creature produces the combined creatures, and the combined the single!

M. de Quatrefages thus describes what he has seen of the metamorphoses of the ship-worm:—

'Let us see what happens to the teredo. The larve is at first almost round, and resembles one of those little sea urchins, every one of whose spines serves it as an organ of natation. It swims about in every direction with extreme agility, and this first state lasts about a day and a half. About this time the outside skin splits and encrusts itself with calcareous salts, and becomes a shell, at first oval, then triangular, and lastly nearly round. During the formation of the shell the vibratile hairs disappear, but this does not condemn the little animal to inactivity. As the exterior hairs disappear, a swelling developes, which is equally hairy, and which enlarges and spreads like a little collar surrounded with fringes. This new organ of locomotion can hide itself in the shell, or display itself outside, and act almost like the wheel of a steamboat.

'Thanks to this apparatus the young larve continues to swim with as great facility as in his first condition; but he has acquired in addition an organ which enables him to walk upon a resisting surface, and to raise himself, for example, along the side of a glass vase. This is a sort of fleshy foot, similar to a long tongue, which lengthens and shortens at will. The larve of the teredo possesses besides auditive organs, like those of several other molluscs, and eyes analogous to those of certain annelides.

'During this period of his existence our mollusc enjoys in a high degree the characteristics of the *être animal*. He moves, and is in relation with the exterior world by special apparatus. Very well! then comes another metamorphose; this same ship-worm loses his organs of movement and sensation, and becomes a sort of inert mass, in which the life of the vegetable almost entirely replaces the spontaneous activity of the animal.'

We have seen young ship-worms, about the size of the head of a large pin, in the little cups they bore for themselves on the surface of submerged wood. As they grow they penetrate across and then along the grain of the wood.

Many remedies have been employed against the devastations of these creatures. Wood for ships has been steeped in corrosive

sublimate, and M. de Quatrefages proposes to prevent the fecundation by means of salts of copper, lead, or mercury, thrown into the docks or basins in which the wood lies submerged. The late M. Laurent, who devoted many years to this subject, thought more success would be obtained by encouraging the natural enemies of the teredoes, the most voracious of which are several species of nereides.

We have called them pests of the seas, these destroyers of rocks and ships. But they do good work; by breaking down the rocks they supply the ocean with the lime which forms the bones of fish and the cement of sandstone; and by destroying the floating timbers washed down by the tropical rivers, they hasten the decay and decomposition of vegetable matter, which is the greatest enemy of the health of animal life upon the globe.

The multifarious contents of the works of Messrs. Quatrefages and Broderip have led us to glance discursively at the idea of life. Life is nutrition and reproduction, which words may be again interpreted by assimilation and metamorphosis. A distinguished physiologist analyzed the blood in the left sac of the heart of a dog the other day, in illustration of assimilation, and found sugar in it, and in the blood which had circulated and reached the right sac there was none. Reproduction consists of changes, which warrant the statement that embryogeny is the science of metamorphoses (from the egg, which is a series of envelopes or cells, onwards to the adult animal), very various in kind, and but imperfectly known.

We conclude by mentioning two great facts which have been touched upon by our authors—the mystery of suspended animation, and the marvellous relations which subsist among animals. Dr. Franklin wished he could have his life suspended a century, to see what had become of the United States. The flies he saw revive in London, after having been corked in wine bottles in Virginia, may not have been quite so long confined as the wine merchant asserted. On the moss of our slate roofs, however, lives an animal, called by the discoverer of it, Leuwenhœck, a rotifer, which dies in dry and lives in wet weather. We have only to wet the moss, and squeeze it into a cup, as if it were a sponge, to see the rotifers under the microscope. The rotifer has become the representative of a class of small animals, chiefly worms (some of which have indeed been classed with eels and spiders, 'Anguillules' and 'Arachnides,') and all of which possess the faculty of suspended animation.

Animals are strangely related to each other. Man has in him, on him, or about him, a representation of the animal world. Every animal has, like him, animal friends and foes. If he is attended by the sparrow, the sleeping crocodile is debarrassed of

the insects in its mouth, and warned of danger by the *zic-zac*, a little plover. Sheep and cattle are protected by daws, magpies, and starlings. The feet and beak of the *beefeater* (Buphaga Erythrohyncha) are admirably adapted to enable it to rid oxen, camels, and antelopes, from the maggots which burrow in their hides. 'When the sleeping rhinoceros is in danger,' says Mr. Gordon Cumming, 'his birds stick their bills into his ears, and utter a harsh grating cry, nor do they desert him when brushed off as he runs, by the branches of trees, nor when pursued by the bullets of the hunter.' Major Denham records a similar observation in regard to wild elephants, and a number of thrush-like birds, who do not quite abandon the elephant even when alarmed by the flashes of muskets, nor after they have been struck by spears. The philosophers who pride themselves on finding a verminous self-interest under appearances of heroic devotion, will not forget to tell us that the birds find ticks, on which they feed, on the backs of the rhinoceros and the elephant.

The adaptation of the structure of animals for the services they are to render to other animals; their relations of mutual advantage; the suspension of life until it seemingly passes in alternate death and life; the power of the feeblest creatures of perforating the harder substances; longevity reaching several centuries; sociability capable of transforming ferocity into friendship, and the extermination of mammal as of human races; such have been the subjects we have enumerated, perhaps of necessity somewhat in the touch-and-go style of a showman before a booth:—but this booth is a temple.

ART. VI.—Πανδώρα, Σύγγραμμα περιοδικὸν ἐκδιδόμενον δὶς τοῦ μηνός. Συντάκται, Α. Ρ. Ραγκαβῆς, Κ. Παπαρρηγόπουλος, Ν. Δραγούμης, κ.λ. Τόμος Πέμπτος. Ἀπὸ Ἀπριλίου, 1854, μέχρις Ἀπριλίου, 1855. Ἀθήνησι. [The Pandora, a periodical published twice a month. Editors A. R. Rangavis, K. Paparrigopoulos, N. Dragoumis, &c. Volume V. From April 1854 to April 1855. Athens.]

2. *Romaic and Modern Greek compared with one another and with Ancient Greek.* By James Clyde, M.A. Edinburgh: Sutherland & Knox. 1855.

GOETHE thought that the idea of destiny which lies at the root of Greek tragedy having vanished from the earth, we ought now to agree with Napoleon that politics is fate. The great German may have been influenced in this opinion by his court connexions

and his aristocratic tendencies; but, notwithstanding, there lies within it a vast deal of truth. In support of this, we could adduce no more striking instance than the present war. What is its object? The British people are most certainly agreed, that it is a war made against a tyrannic government, which threatens to drag all free men within its murderous grasp. So far, all right; and we, as one of the British people, would urge its thorough and resolute prosecution. But as soon as we come to look a little more closely into matters, we are met on all sides by the most puzzling questions and difficulties. On the very threshold we are stopped by the inquiry, What object has the British government in carrying out the war? For be it remarked, there is an immense difference between the British government and the British people. The British people are loud in the praises of liberty, and have a deep and heartfelt persuasion of its blessings. The British government on the other hand are essentially despotic, their sympathies lie with the continental despots, and their acts, when not forced on by the representations and enthusiasm of the people, have been despotic in their nature and tendency. What motive then can they have in this war? Unfortunately, they have none. It was a mere accident to all appearances that led them into it; they tried to slink out of it as well as they could; they hoped for an amicable settlement with their despotic friends, and doubtless they would long ere this have allowed the Czar to prey on Turkey, had there not been in Britain a freedom-loving, noble-hearted people to compel their sluggish and apathetic rulers to a more determined and more manly course. If thus entering on a war with no leading idea, in fact nothing to fight for, but merely something to fight against, we may be sure that they will conduct it without any such idea, and the consequence will be, that, when, as often happens, the cause of liberty might be served, its interests will be neglected, and even its services despised.

We shall not enter into a more minute discussion of these matters. Any one can easily suppose for himself how a skilful government, anxious to see men everywhere freed from tyrants, might find auxiliaries to itself by acting sympathetically with millions of Germans and Italians who long for a free land. We say, a *skilful* government, for no one can be blind to the immense difficulties with which it would have to cope. In the meantime, we wish merely to direct attention to a small corner of land, once the seat of the most illustrious city-states, the birthplace of the most gifted artists, and the home of some of the greatest thinkers of the past.

The difference between the British government and the British people has nowhere made itself more completely mani-

fest than in the case of Greece, and nowhere has it wrought more mischief. The British people hailed the Greek revolution with the utmost ardour, assistance was sent them from all quarters, Philhellenes raised subscriptions for them in London, and Philhellenes went over and fought for them in Greece. But as surely as the British people sympathize with any spark of liberty, as surely does the British government try to extinguish it in their own quiet unobserved way. Again and again did our consuls play the most detestable part in support of the Turks. Again and again have men, dressed in a little brief authority, played fantastic tricks before high heaven in the government of the Ionian Islands. And more than once has there been wanton interference with Greeks, merely to show them that the British lion is not to be tampered with. What is the consequence? Just this, that the Greek people have far more ardent expectations of liberty from Russia than from England, and that, if they are to be under a foreign government, they would choose the domination of the Czar rather than the rule of Britain. For Russia has been kind to them, has favoured their idea of freedom, has been supposed to work for it, and even yet her representatives do all the good they can to the Greek nation, and aid the prosperity of Greek institutions. Even this very war at first sight seems undertaken in behalf of Greek Christians against Mohammedan Turks. We know for a certainty that the Czar had far other aims. His communications with Sir Hamilton Seymour, are to us most conclusive proofs that the autocrat in his ambition thought nothing of Christians, except so far as he might subject them, soul and body to himself, the supreme head of Church and State. And the Greeks by this time should be aware that Nicholas (and doubtless his successor is of the same mind) affirmed that he would 'never permit an attempt at the reconstruction of a Byzantine empire, or such an extension of Greece as would render her a powerful state.' Indeed many of the Greeks are well aware of this. But what matters that? Russia has hitherto entwined the interests of Greece with her own, and Greece will cling to her and side with her, so long as free England can offer her nothing but the stern and haughty treatment in which our aristocratic rulers delight.

The vast difference between the present position of the Greeks and the Turks is this; that there are the elements of progress in the one, and the most marked signs of decay in the other. Turkey can advance only when it has ceased to be Mohammedan; Greece has begun to advance, and has had for some time within it a party of noble-minded men longing for the moral and intellectual regeneration of their native land, and some of whom have already bequeathed to her heroic deeds, and self-sacrificing

labours. Here is the determining point for us. Granting that all the accusations that have been poured of late on the Greeks are true to the smallest tittle, that they are cheats, lazy scoundrels, ignorant, selfish (though by the way, we ought to remark that Englishmen knowing modern Greek, almost invariably bring back a good report, a small minority like Joshua and Caleb of olden times, while the great numbers who do not, cannot find terms adequate enough to express their contempt and their disgust), granting all this for the sake of argument, it is still indisputable that there is within Greece a fellowship of workers, who have resolved, and now labour hard to raise their country from its degradation. Within itself there are the elements of a new existence. These patriotic men are not so foolish as to deny the moral disintegration of Greece. Though anxious to maintain their country's credit, whenever it can be upheld, and though they occasionally praise it more than it deserves, (no very heinous fault, surely !) yet still the palpable fact lies before them, that vast numbers of the Greeks are uneducated, polluted by many vices, and often guilty of deeds as foolish as they are injurious. The hard strugglers in the battle of Greek regeneration have again and again to complain of the apathy of their fellow-countrymen, nay even of the apathy of the government, and the selfish conduct of Greek ministers. But why wonder at this? As Professor Phrearitis says, in an article on education, 'the Greek nation is yet a babe.' It has as yet had scarcely thirty years of liberty, in which it might throw off the prostrating and demoralizing effects of a slavery more than four hundred years old. A nation is not born in a day. Evil habits, especially the evil habits engendered by tyranny and slavery, are not shaken off in the twinkling of an eye. The Greeks ask fair play. 'Give us time and give us opportunity, and then you will see what education can make of us.' 'Why,' says Professor Phrearitis (p. 530), 'are we vexed with the hired Fallmerayer, because he writes against us that we are not Greeks, when we afford him the greatest proof of this in despising our own great ones, and gaping for the least pittances of foreigners? O ministers of Greek instruction and the Greek church ! none of us is guilty in this, the Greek nation is yet a babe ; it has need of a teacher and a guide (*παιδαγωγοῦ καὶ χειραγωγοῦ*) unwearied and faithful to introduce it to the ancestral storehouses of knowledge, and to point out to it the ancestral mine. But this is up to this time covered over as it were ; uncover it, O minister, through suitable workmen, and then you will see how brilliant, abundant, and magnificent it is. Unfold it to our eyes, and you will hear from the mouth of all one cry, "We all wish to be scholars of those whose sons we verily are."'

Such earnest endeavours ought not to be despised. It is those noble-hearted men thus intent on the welfare of their country, that make Greece at present a most worthy object of sympathy, and of pleasant contemplation. The Turks have no such men. The Turks can point to no such strivings among themselves to bring about a regeneration, and consequently we have no such strong and just hope for Turkey as we have for Greece. How do these Greek patriots intend to raise their country? This is a subject keenly discussed among themselves. One of the articles of the 'Pandora' is entitled, 'What are the Centres of National Unity?' The writer, Mr. Carousos, of Cephalonia, finds them in Byzantium and Athens—Byzantium, the seat of the patriarchate and the church; and Athens, the seat of learning and education. The church and the school are the watchwords of Greek patriots, for the opinion of Mr. Carousos is shared by almost all the active and earnest men in Greece.

A British reader might ask, Why the church? and certainly the reason is quite a peculiar one. It is not that the clergy are so good that they will reform the people. In a pamphlet on Education by Professor Stroubis, we met with the following suggestion: 'Where the constitution of such a school becomes impossible on account of the number of the population, let the priest have the task of teaching the children writing, reading, the four rules of arithmetic, and the holy catechism,' &c. Then again, he asks: 'Why is the Word of God rarely heard preached from the sacred pulpit in the capital itself, and almost never in most of the villages and towns?' And farther on, he affirms of the priests, that they 'eat the fat, and clothe themselves with the wool, and kill them that are fed, but do not feed the flock. The diseased they have not strengthened, neither have they healed the sick, neither have they bound up that which was broken, neither have they brought again that which was driven away, neither have they sought that which was lost, but with force and with cruelty have they ruled them.' (Ezek. xxxiv. 3, 4.)

In reviewing this work for the 'Pandora,' Professor Phrearitis makes the following remarks on the suggestion and the accusations (p. 526):—'Here our writer talks as if he had come immediately from Scotland or Northern Germany straight into Greece. He is ignorant that not only in villages, but not even in Greek cities, are there educated priests scattering in the midst of the people, as happens in other happy lands, the light of the Divine word and the civilization of Christianity. He is ignorant that such a blessing has not been vouchsafed to us by Divine Providence. He is ignorant that most of our priests have themselves need of instruction in our public schools. But does the clergy fail on that account? Far be the thought from us. The

Greek clergy, though such, is beloved and respected by us, because it has in it the virtues and feelings with which the orthodox faith inspires all its servants: devotion to country, love towards neighbours, with endurance of others,* a strong attachment to liberty and intellectual development. As individuals, our priests are very good; but as teachers of the people, and as moulders of the community, they are altogether unsuitable, and just for this reason, that ever with them what is impossible is not possible. Who of us has ever sincerely thought about the general education of the clergy? who has provided for their regeneration? who has cared for their freedom from their present slavish condition? who has held forth a hand to raise them when they have fallen? Who has elevated them to a position whence they might become the teachers, the advisers, and the helps of the people?'

In these circumstances, very little is expected from the clergy. Is the belief, then, in the dogmas of the Greek church reckoned so purifying that hope arises from that quarter? No such thing. The reason is purely an historical one. Ever since the Greeks were subject to foreign sway, the Greek church has held them together as a nation. It preserved their language, it prevented them from blending with Turks, and it has ever kept their eye steadily fixed on Constantinople. Hence it is believed that it will perform the same function for the future. It is not merely a few, but all the first-rate Greeks, including Tricoupis, who are of this opinion. We are not astonished at the unanimity that prevails on this point. The strong desire to see their country acting harmoniously and powerfully has led them into this singular idea. But we must say, we cannot but regard it as a dangerous one; and possibly enough, it may be big with gloomy results for Greece. We spy breakers ahead. There are sunken rocks along this course, against which the slim Greek caique may be shattered to pieces. If the Greeks were unanimous in the belief that the doctrines and faith of the Greek church were true in the sight of God, the Greek church might then perform the office demanded of it. But we are afraid this is not the case. Many of the most learned and the most influential, if our reports be correct, feel doubts gathering around them, and some of them have more than doubts. But according to this plan, these doubts and inquiries are to be stifled to serve a political purpose and to prop up a much desired nationality. Religion is to be compelled to dance attendance on politics, and do its dirty work. Surely, these men forget that out of a sham and a lie no good can by

* This peculiar part of the teaching smacks of their feelings and relations to the Turks.

any possibility come; on the other hand, that God punishes national hypocrisy in the strictest and severest way.

A Greek might reply to us, 'You do not feel the difficulties which beset us. We have just two alternatives, either Roman-catholicism or Protestantism. Roman-catholicism is not only spiritually but also temporally despotic; and we, therefore, can have nothing to do with it, as we hate temporal despotisms. Protestantism, again, is split up into so many parties that there is no unity.' Such, in fact, is the defence of the Greek church by Mr. Carousos. We object to the very form in which the defence is put. Religion, the highest and noblest privilege of man, is the grandest aim of either a nation or a man, and the attempt to subordinate it to a political aim must infallibly end in confusion and ruin. And after all, we do not think the Greeks are so snug in their church as they fancy. There are obvious causes for the unity which has hitherto existed; causes which are now vanishing, even as we think the object for which the church has been useful has been accomplished. Moreover, the Greek church is under its patriarch just now; but if Russia ever get power over Turkey, the Czar becomes their patriarch, and a patriarch somewhat stronger than the Pope. But if Russia fail, and all the Greeks become free men, Protestantism is inevitable. The very strength of individuality caused by liberty necessitates variety of opinion. And it would be in every way ruinous, if the Greek patriots, out of a patriotic motive, were to place themselves in the way of the free development of the religious nature. A pretended faith is hateful to God and man.

The other centre of Greek nationality is education, which accordingly has excited a vast deal of attention. Indeed, the literature of Greece is at present occupied very much in discussing the methods of education, and the schemes according to which it should be directed. Ought the government to have the management? Or ought the clergy? Or ought the demes or parishes? Ought schools of all kinds to be open to all classes free of fee? Ought the government to compel parents to send their children to school? Such are the subjects now agitated in Greece.

There has been something more, however, than agitation. The work of education has been going on, and we may take the success already attained as but an earnest of the great results that will follow. Indeed, we do not think that enough attention has been given to what we cannot but call a most extraordinary intellectual movement among the Greeks. Just look at the language. But a few years ago, it was a strange jargon of Italian, Turkish, and Greek, reducible to no grammatical rules, and with nothing as a literature but some national ballads and popular un-rhymed stories. Now it is old Greek back again,

Greek clergy, though such, is beloved and respected by us, because it has in it the virtues and feelings with which the orthodox faith inspires all its servants: devotion to country, love towards neighbours, with endurance of others,* a strong attachment to liberty and intellectual development. As individuals, our priests are very good; but as teachers of the people, and as moulders of the community, they are altogether unsuitable, and just for this reason, that ever with them what is impossible is not possible. Who of us has ever sincerely thought about the general education of the clergy? who has provided for their regeneration? who has cared for their freedom from their present slavish condition? who has held forth a hand to raise them when they have fallen? Who has elevated them to a position whence they might become the teachers, the advisers, and the helps of the people?'

In these circumstances, very little is expected from the clergy. Is the belief, then, in the dogmas of the Greek church reckoned so purifying that hope arises from that quarter? No such thing. The reason is purely an historical one. Ever since the Greeks were subject to foreign sway, the Greek church has held them together as a nation. It preserved their language, it prevented them from blending with Turks, and it has ever kept their eye steadily fixed on Constantinople. Hence it is believed that it will perform the same function for the future. It is not merely a few, but all the first-rate Greeks, including Tricoupis, who are of this opinion. We are not astonished at the unanimity that prevails on this point. The strong desire to see their country acting harmoniously and powerfully has led them into this singular idea. But we must say, we cannot but regard it as a dangerous one; and possibly enough, it may be big with gloomy results for Greece. We spy breakers ahead. There are sunken rocks along this course, against which the slim Greek caique may be shattered to pieces. If the Greeks were unanimous in the belief that the doctrines and faith of the Greek church were true in the sight of God, the Greek church might then perform the office demanded of it. But we are afraid this is not the case. Many of the most learned and the most influential, if our reports be correct, feel doubts gathering around them, and some of them have more than doubts. But according to this plan, these doubts and inquiries are to be stifled to serve a political purpose and to prop up a much desired nationality. Religion is to be compelled to dance attendance on politics, and do its dirty work. Surely, these men forget that out of a sham and a lie no good can by

* This peculiar part of the teaching smacks of their feelings and relations to the Turks.

any possibility come; on the other hand, that God punishes national hypocrisy in the strictest and severest way.

A Greek might reply to us, 'You do not feel the difficulties which beset us. We have just two alternatives, either Roman-catholicism or Protestantism. Roman-catholicism is not only spiritually but also temporally despotic; and we, therefore, can have nothing to do with it, as we hate temporal despotisms. Protestantism, again, is split up into so many parties that there is no unity.' Such, in fact, is the defence of the Greek church by Mr. Carousos. We object to the very form in which the defence is put. Religion, the highest and noblest privilege of man, is the grandest aim of either a nation or a man, and the attempt to subordinate it to a political aim must infallibly end in confusion and ruin. And after all, we do not think the Greeks are so snug in their church as they fancy. There are obvious causes for the unity which has hitherto existed; causes which are now vanishing, even as we think the object for which the church has been useful has been accomplished. Moreover, the Greek church is under its patriarch just now; but if Russia ever get power over Turkey, the Czar becomes their patriarch, and a patriarch somewhat stronger than the Pope. But if Russia fail, and all the Greeks become free men, Protestantism is inevitable. The very strength of individuality caused by liberty necessitates variety of opinion. And it would be in every way ruinous, if the Greek patriots, out of a patriotic motive, were to place themselves in the way of the free development of the religious nature. A pretended faith is hateful to God and man.

The other centre of Greek nationality is education, which accordingly has excited a vast deal of attention. Indeed, the literature of Greece is at present occupied very much in discussing the methods of education, and the schemes according to which it should be directed. Ought the government to have the management? Or ought the clergy? Or ought the demes or parishes? Ought schools of all kinds to be open to all classes free of fee? Ought the government to compel parents to send their children to school? Such are the subjects now agitated in Greece.

There has been something more, however, than agitation. The work of education has been going on, and we may take the success already attained as but an earnest of the great results that will follow. Indeed, we do not think that enough attention has been given to what we cannot but call a most extraordinary intellectual movement among the Greeks. Just look at the language. But a few years ago, it was a strange jargon of Italian, Turkish, and Greek, reducible to no grammatical rules, and with nothing as a literature but some national ballads and popular un-rhymed stories. Now it is old Greek back again,

adapted for these times, used for modern ideas, but yet pure, idiomatic, very copious, and beautiful. Mr. Clyde has done essential service to the scholarship of our country by pointing out what the language of the Greeks really is. Induced by the statements of Professor Blackie, he took a trip to Athens to study the language for himself, and he has detailed in the learned disquisition before us the 'result of eight months' observation and inquiry on the spot.' He deserves especial credit for the clearness with which he has marked out the difference between Romaic and modern Greek. He says:—

'The difference between Romaic and modern Greek cannot be better represented in brief than by that which exists between broad Scotch and good English. There are phrases in the one unknown to the other, like the famous "neffou o' glaur," which all the English of George IV., and his boasted knowledge of Scotch to boot, were unable to explain; the truncation and fusion of words, incident to all merely colloquial dialects, and prevalent in the one, are rejected by the other; the one is subdivided into innumerable varieties, under the tyranny of local influences; the other triumphs over provincialism, and varies not according to the birthplace, but according to the education of him who uses it; the one has no literature except proverbs and popular poetry; the other is the vehicle of all knowledge to an entire people; and just as in Scotland the educated recur to the vulgar dialect, for the sake of intelligibility, when discoursing with the illiterate, and, in certain circumstances, even when discoursing with one another, to avoid the appearance of affectation, or for the sake of forcible, familiar, or comical expressions, so in Greece, where Romaic is still the language of the nursery and the playground, and where, from the rarity of preaching and the recency of schools, the people in general are not yet familiarized with modern Greek, as are the humbler classes in Scotland with good English, there is a large admixture of Romaic in the conversational style even of the educated classes.'—pp. 4, 5.

We can add our testimony to Mr. Clyde's assertions. The volume before us of the 'Pandora' is written throughout in beautiful Greek. Scarcely a word occurs which is not at once recognised by a Greek scholar as an old acquaintance or the combination of old acquaintances. Indeed, we are rather inclined to think that the Greeks have gone Greek-mad. They will not admit a word that is not Greek into their language. Nay, more, they must translate everything. The 'Times' is *ὁ χρόνος*, the Tuileries is *τὰ ἀνάκτορα τῶν Κεραμείων*, the Palace of the Tileworks, and Doctor Smith is *Διδάκτωρ Σμίθ*, Teacher Smith. We heard lately of a curious instance of the prevalent determination to speak modern Greek. A Greek friend of ours told us that he had seen, in his native place, a small volume, which had been just published, containing genuine Greek

equivalents for the usual Turkish and Italian names of household articles, and the people were committing to memory the Greek names of their chairs, slippers, and such like, that they might discard the foreign terms.

The progress of the language is a sign that the education of the people has in some measure been successfully carried on. We cannot but regard the success as really marvellous. Mr. Clyde gives a list of the schools in Free Greece (p. 52):—'To popular schools, and to the press, modern Greek is mainly indebted for its spread, and its prospect of ultimate consolidation. It deserves to be known, that in the organization of its schools, the petty kingdom of Greece may challenge comparison with the most advanced nations of Europe. The following summary of the official educational returns for 1853, is borrowed from the *Φοίνιξ* for June of that year:—

		Attendance.
'Popular schools, in which the instruction is gratuitous for boys	279	33,441
Ditto ditto ditto, for girls	36	
Greek schools, with four teachers each	72	5,750
Gymnasia, with seven teachers each	7	1,950
Private gymnasia, competing with the former	4	?
University, with forty professors	1	400'

'Besides these, there are normal schools for the training of male and female teachers, as also special schools, theological and military, agricultural and artistic.'

These facts are deeply interesting. Poor depressed Greece is better provided with schools of a higher class than Scotland. We do not think that there is a single university in Scotland with a complement of forty professors, and a glance at the scheme of studies pursued shows that subjects are represented in the Othonian University which have not yet found a place in the best British institutions, political economy for instance. Then again, Scotland has not, we believe, a single school in which there is a regular staff of seven teachers, and it cannot have more than ten, if nearly so many, with a staff of four teachers whose attention is devoted exclusively to the higher branches of education.

The Greeks themselves complain that owing to their own poverty, and to the apathy of the masses, their country stands far behind in the number of the educated. The proportion of scholars to the population is reckoned at 40 in the 1000, there being in France 84 to the 1000, in 1841; and in Switzerland, of males alone, there were 181 to the 1000. Of course they cannot rest satisfied with this state of matters. 'The request,' says the writer from whom we take these statistics, 'of Mr. Stroubis does not appear to us extravagant, that there be one

school to every thousand inhabitants, or that there be a thousand public schools throughout the kingdom, when in the Canton of Vaud, in Switzerland, there are 639 public schools to a population of 160,000' ('Pandora,' May 15, 1855).

Nor are they content with their university. They wish to see it far more numerously attended, and better equipped. There were last year 643 students, 20 of theology, 190 of law, 317 of medicine, 74 of philosophy, or as we should say, of arts; and 42 attending the pharmaceutical class. The commercial classes give them very essential aid. Merchants are continually leaving them legacies; several are devoting large sums out of their gains to foster education; and there seems to be spreading an intense national feeling, which hopes to see Greece spring up to life by means of its educational and literary institutions.

The literature of the Greeks may give a good insight into the success of the higher educational appliances. A long time must necessarily elapse before we could expect much in the shape of well-written books. Yet he would be very exorbitant in his demands, who should be disappointed with what they have done. They have got poems and novels of genuine Greek origin. Asopius, Rangavis, and Mavrophrydis, would stand high as philologists anywhere. Contogonis has written an account of the literature of the fathers, more learned and more able than anything we know of in Britain, and Paparrigopoulos has composed admirable histories of Greece. The natural sciences have also their representatives; medicine is a favourite study; lawyers discuss law philosophically; and in one word, there is a literary activity wonderfully prolific considering its recent origin and the small public on which it must depend.

Politics run very high in Greece. Political discussions entrance the soul of a Greek. Alexandros Soutsos, in one of his novels, thus alludes to this feature of the Greek character. 'In Greece, politics from the magistrate to the porter, is our inborn general madness, and frequently shepherds of Parnassus and of Taygetus stop travellers by the way, and ask them if the kings of Europe are at war or peace with one another.' Accordingly, newspapers are numerous. Mr. Clyde, quoting from the 'Spectateur de l'Orient,' for September, 1853, gives the names of thirty-one journals issuing from the Greek press, two or three of which are French. Others have sprung up since, in consequence of the excitement caused by the present aspect of affairs in the East. There are also several periodical publications. Of Athens, Mr. Clyde thus speaks (p. 52):—'Athens, however, is the capital not only of Greece, but of the Greeks everywhere, as is clearly evinced by the surprising development of its periodical press. With a population somewhat over 30,000, it possesses about

twenty newspapers, of which four are published twice, and the rest once a week, besides seven monthly or bi-monthly periodicals, literary and scientific.'

One of these bi-monthly papers we have placed at the head of this article, both because it has given rise to our remarks, and because it deserves the attention of British scholars. The editors, professors in the university, do not find themselves very strongly supported. Indeed, as we have said, the reading public in Greece is too confined to admit of this. But they have resolved to struggle on, because their services are for the good of their country. Most assuredly they are. The 'Pandora' is a specimen of what Greeks can do. And we do not know any way in which a scholar, anxious to improve himself, and willing to assist a nation that is dear to him, could accomplish both things more easily than by spending a pound yearly in taking in the 'Pandora.' Indeed, our scholars will find it no mean advantage to do so. The Greeks are on the spot of investigation, they have now got a philological harness buckled on them, and they go out to plough in their own fields animated both by a love of knowledge and a love of country. The result will soon be felt. We have seen an admirable monograph by Vamvas on the monument of Lysicrates, and in the present volume of the 'Pandora,' a Greek scholar gives an account of gems and coins which he has collected, some of which are interesting, and twelve very curious ones are figured. Besides this, we have archæological journeys,—a field in which the Greeks may do a great deal yet.

The articles belonging to the class of general literature are not so numerous as they should be. Every number contains a part of a tale, almost invariably borrowed from the French. We have once and again looked for some tales of a native growth, for it would be exceedingly interesting to have genuine pictures of Greek domestic life from Greeks themselves, but we have been disappointed. We are surprised at this, because we have read an admirable story from the pen of Professor Rangavis, one of the editors of the magazine, and whose reputation as a poet is deservedly high. There is a fine field open here for the Greek ladies. There are many of them, we have no doubt, who could portray scenes and characters interesting both to Greeks and foreigners. The ground is as yet fallow. The Soutsoses have broken but a small corner, and yet they have produced very stirring novels.

Among other endeavours to create a Greek literature, the founding of a prize for poetry, by the benevolent Mr. Rallis, deserves especial notice. Every year, the *élite* of Athens, ladies and gentlemen, wend their way to the University, a professor delivers an oration, criticising all the poems that have been sent

in for competition, and then the victorious poem is proclaimed amid shouts of applause. These orations are printed in the 'Pandora.' That of Professor Rangavis in this volume is admirable, full of wise searching criticism, but sometimes we should be inclined to say, rather severe. Perhaps there is good reason for this.

Such a mode of encouraging poetry, people in this country might not think likely to produce great results. Our Oxford prize-poem writers do not very often charm the world as poets. Yet there can be no doubt that in Greece it succeeds. The rise of a poetical taste is very manifest, and this year there were sent in for competition a number of really good poems. The prize was adjudged to Mr. Theodoros Orphanides. His poem is now before us, in the 'Pandora' of June 1st, 1855. Its title is 'Anna and Florus; or, the Tower of Petra.' The measure is the hexameter. Anna and Florus are lovers, dwelling in Bœotia. Anna rejoices in a loving and tender father, Lampros, who is well known throughout the whole place. Florus is distinguished for his free sentiments and his hatred of tyrants, the feeling having been begotten in him by the loss of his father, who was murdered by the Turks while he was yet a child. Unluckily, Antonelli, an Italian, a man black with crimes and vices, falls in love with Anna, and by means of false accusations, he persuades the Turkish governor to lay hold on her father just as the marriage of the young couple is being celebrated. Here Orphanides, like all the competitors, pours out his vial of wrath on the Turks. Anna is altogether disconsolate. A maid servant brings her a letter, in which she reads, that if she go alone to the Tower of Petra, she may save her father. The beautiful girl suspects no danger, and goes, but is immured, Antonelli having taken this means to decoy his victim. A report goes abroad that she is in the harem of the Turkish governor, but Florus soon discovers its falseness, and prepares to storm the retreat of the Italian. A frightful scuffle is the consequence of this attempt, in the course of which Anna is slain. Years elapse, and a monk asks for the superior of a monastery situated where these occurrences took place. The superior is not at home, but on his arriving, the young brother is thunderstruck, when he recognises Lampros in the superior. He then entreats to have the care of the flocks belonging to the monks assigned to him. He goes up with the shepherds to the hills of Bœotia, but a snow-storm coming on, he is separated from his companions, and dies in his lonely hut of cold and hunger. After the snow vanishes, papers are found on his table, in which he confesses, that actuated by revenge for his beloved Anna, he had gone to Italy in search of Antonelli, had found him, and had plunged his dagger into his heart. The

story is well told, there is much beautiful description, passages of great force and power, and altogether the poem witnesses to much originality of invention and true poetic genius.

We are glad to see that the literature of England is well-known among them. We have in the volume before us a translation of Grote's chapter on Socrates, a long account of Byron from Washington Irving, a few anecdotes of Milton, and a notice of Charles Dickens. The review portion of the periodical announces that the 'Pilgrim's Progress' has been translated. A Greek has published an 'Anglo-Hellenic Lexicon.' Mr. Parmenides furnishes good translations from the prose of Longfellow and the poetry of Bryant. Then we have a review of the American edition of Dr. Smith's 'History of Greece.' And last of all, we find proposals for a translation of Dr. Smith's 'Dictionary of Antiquities.' The translator, Mr. Pantazis, applied to the Minister of Education for a contribution to his great undertaking, and received a most favourable reply, in which Dr. Smith's services are recognised far more warmly than they will be for some time to come by the British Government. His dictionary is styled '*τῆς Ἑλληνικῆς ἀρχαιολογίας λεξικὸν τοῦ ὄντως δεινοῦ περὶ τὸ εἶδος τοῦτο τῆς ἀρχαιομαθείας Ἄγγλου*, W. Smith,' 'The Lexicon of Greek Archæology of the Englishman W. Smith, who is truly terribly clever in that kind of ancient learning.'—'Pandora,' May 19, 1855.

These facts, we hope, are sufficient to prove that the Greek mind is active. We might show that the same activity is going on in other departments. Thus, for instance, the Greeks sent to the Paris Exhibition two marble statuettes, the first specimens of genuine native sculpture which have been produced in revived Greece. The land of Phidias has taken up the chisel again. These statuettes are the works of Lazarus and George Phytalis of Tenos, scholars in the School of Arts at Athens, and are wrought out of Pentelic marble. The work of Lazarus is a shepherd leaning against a tree, and playing the flute, with a dog by his side, whose attention is arrested by the music. It is thus described by a writer in the 'Pandora' for May 15, 1855:—'The shepherd of Lazarus, in silence holding his flute, all his thoughts centred in himself, expresses wonderfully the calm of his soul and that of surrounding nature also, especially by means of the attention of the dog to the flute. The simplicity of the character, the melancholy sentiment of the expression of his face, the picturesque clothing of the Greek rustic, and the careless shepherd life, are so beautifully imprinted on the flute-player, that this little statue has attained the aim of the artist; and also, on account of the accuracy of the whole work, the praises of the spectator.'

The work of the other brother is an armed free Greek, sitting on a rock, on the outlook, and is thus described:—'The free Greek of George sitting upon a rock, appears as rising, and holds his left hand to his forehead, and looks into the distance, while, with his right he takes up his weapon, ready and eager to anticipate the coming danger. The involuntary (so to speak) movement of the armed man, the expression of the countenance, the energy of the whole body, while he yet appears sitting, wonderfully fulfil the condition required by the art of sculpture, namely, the representation at the same time both of motion and rest. The life in the face is so well expressed that he who gazes upon it thinks he hears him murmuring within his lips the song,

'Many a black cloud poured upon us, like the raven black,'*

from which it is very evident the artist drew his inspiration. The religious accuracy with which he has done every part of the clothing, while not neglecting the nakedness recommended by the art, the minuteness of the work of the folds, the execution difficult on account of the motion, and the truth of the anatomic representation claim for this work well deserved admiration and praise.'

We had intended to extract largely from some articles on the shipping of Greece, to show that the Greeks are advancing in other directions than that of intellectual exertion. Indented on all parts by the sea, they have ever delighted in breasting the ocean, and now that their activity has once more got an open field, they are making rapid strides. In 1834, they had 2891 ships; amount of tonnage unknown. In 1838, the ships numbered 3269; and the tonnage amounted to 88,502. In 1853, the ships were 4153 in number; and the tons 247,995. Syra is the most considerable of their ports, having 634 ships. The Piræus has 374.

We have reviewed the 'Pandora' with very great pleasure. We should give all the encouragement we can to the patriots who labour in their country's cause. There is one danger they must guard against very carefully and anxiously. In imparting knowledge, they must endeavour to awaken a true morality and a genuine godliness. Prometheus, in relieving men from their primæval wants, made mortals so cunning and so astute that they thought they might cheat the gods of their sacrifices. The legend has an ever-living meaning. Is not the Greek character but too apt to turn its intellectual acuteness to selfish ends? Let these

* This song describes the death of Diakos, who fell at Thermopylæ, fighting as bravely as Leonidas ever fought. The ballad is given in Donaldson's 'Lyra Græca,' p. 147; and an admirable account of the hero will be found in Tricoupi's 'Greek Revolution,' vol. i. p. 260.

earnest men trust in God. Let their hope be not in princes, Russian, or of any other kind; but let them trust in the great King of Heaven. Let them act as continually under His eye and in His service, and then, whether British or Russian governments try to crush them or to aid them, they will be successful; and they will see their nation rise from its ignorance and its destitution, assume a place among the ruling nations of Europe, and perform ably and thoroughly its destined mission.

ART. VII.—*Locke's Writings and Philosophy, historically considered, and vindicated from the Charge of contributing to the Scepticism of Hume.* By Edward Tagart, F.S.A., F.L.S. 8vo. pp. 504. London: Longman & Co.

IT would be difficult to characterize this volume, and give a clear notion of its scope and method to our readers. It is, however, of less importance to do this, since it is a work of impotent pretence, and *can have* no permanent standing in *philosophical* literature. The main reason for bringing it under review at all, is our *desire* to render our contribution of respectful criticism upon that great philosopher whose defence Mr. Tagart has magnanimously assumed, and, consequently, to protest against '*his*' right of *championship*. The name of Locke remains a watchword in the continued and interminable contests of philosophy; and the fact that it is heard resounding on either side, wherever the opposing ranks—of the sensationalists and *rationalists*—join their battles, shows indisputably that he occupies that μεταίχμιον γῆν, which is the scene of contest *because* it is the realm of truth. We make Mr. Tagart's book the occasion of some remarks respecting Locke, and the controversy still pending as to his connexion with the two philosophical parties that seem to wax and wane, in their respective ascendancy over the public mind, like the two *undying political parties* found in every commonwealth. We must simply, however, devote a page or two (parvum parva decent) to this volume, which has to *serve* as an introduction to the greater work of Locke.

The professed object of the volume, as stated in the first page, 'to remove or soften the unfounded and hurtful prejudices' that have been raised against the writings of Locke, and 'to vindicate their scientific worth,' is most laudable; and if it had been pursued with moderation of temper, with clear consecutive purpose, with an average amount of scholarship and critical talent,

the work would have been gladly welcomed by the large numbers who are now beginning to surround and honour Locke as their intellectual chieftain.

It remains for us to extricate and exhibit the method which Mr. Tagart has adopted in his defence of Locke, and then to give specimens of his heroic style of language and criticism, which will abundantly 'vindicate' the judgment we have given above.

His method must be extricated from the mass of contents; and even then it will be found that there is method only in the different sections, but no higher method binding these fragments into a consistent and integral work. The thread of the labyrinth is broken at every angle, and it is only by painful search that we again pick up the thrum. We have never read a book in which the writer seemed so unable to guide his thoughts towards the accomplishment of his object;

> 'Et ordinem
> Rectum evaganti fræna Licentiæ
> Injicere.'

The words of Shakspeare have haunted us throughout our perusal of it, as descriptive of its structure;

> 'Strange things I have in head, that will to hand,
> Which must be acted, ere they can be scanned.'

Mr. Tagart's aim is to soften, and, if possible, to eradicate the prejudices which have unhappily prevailed against the philosophy of Locke. For this purpose, he says, 'it is desirable at the outset to adduce some evidence of the nature and prevalence of the prejudices which I endeavour to remove; I shall then proceed to trace the origin, and inquire into the reasonableness of such prejudices.' Yet one half of his book is taken up with cursory notices of philosophers who lived before or after the time of Locke, but who have as little to do with those prejudices operating in men's minds now as any other of our forefathers who are quietly slumbering in their graves. For example, the ghosts of Bacon, and Campanella, and Henry More, are raised, and made to stalk in attenuated and shadowy form—no speculation in their eyes—through these pages. Again, there is a long critique on Leibnitz, but instead of calmly discussing the arguments of the 'nouveaux essais,' these are despatched in two or three pages, and the lengthy remainder is occupied with a discussion of the principles of the *Theodicæa*. What these have to do with Locke, or the writer's professed object, we are baffled to comprehend, and 'quod foret mirum omnibus,' the optimism of Leibnitz, and Soame Jenyns, is here vehemently applauded, and asserted with a hardihood from which they themselves would have shrunk. The solution of that awful enigma, 'The origin of evil,' Mr.

Tagart proclaims to be easy. These are his words:—'When views like these (viz., of Jenyns, &c.) have been entertained by so many thoughtful men, it is idle to say with Gibbon, that they are too vast for a mortal mind. There is nothing in them *particularly difficult.*'

In like manner he drives his readers with the most tormenting coolness through the entire brake of philosophical controversy (for the name and cause of Locke are soon forgotten by him); he pursues the most zigzag course, in order that they may escape no difficult problem, no thorn or spike by which he himself has been jagged or impaled; and in conclusion, we are presented with an outline of the progress of English philosophy. This outline includes only the names of Bacon, Hobbes, Locke, and Hartlez, in connexion with the latter of whom he barely mentions the names of Bentham, James Mill, Adam Smith, Brown, and Butler, as his disciples. Yes, Butler also is among the crew; for Mr. Tagart has discovered that Butler is 'perfectly utilitarian, substantially Hartleian. And, what is worse, this outline bears as little relation to Mr. Tagart's object, as the outline of the great chalk horse in the Salisbury Plains, or the outline of any cloudy cumulus in the skies.

But 'he found no end, in wandering mazes lost.' After an abrupt termination, we are left in vague amazement, which deepens and thickens upon us—if it be not mingled with anger, when we look again at the grand strutting preface—the 'os magna sonaturum'—with which the volume is introduced, and reflect not merely how his object has failed, but how all the prejudices he proposed to assauge would be exasperated and aggravated if we were to accept his exposition of Locke's philosophy as correct. He represents the system of Locke to be intimately, organically connected with those of Hobbes and Hartley; and he defends all three with an equally lusty zeal.

We may safely affirm that no point of the controversy between the sensational and rationalist schools is clearly apprehended, or intelligibly explained by Mr. Tagart (some proof of this we shall give by and by); but so far as loose declamatory language goes, the tendency of his book is towards rank sensationalism. It smells of the earth, earthy; for example, amid the haze of darkening verbiage, Mr. Tagart contrives to make it clear that 'the most comprehensive and refined intellectual conclusions, the results of the reflective powers, in their most perfect and beautiful developments, the most refined affections and habits of theopathy, sympathy, and the moral sense,' are traceable to a common 'sensational root;' and as Pisistratus Caxton says of a female friend, 'She took measure of a gift, as I was taught at Dr. Herman's to take measure of the height of the tower by the

length of the shadow it cast on the ground,'—so Mr. Tagart estimates the work of all philosophers in proportion as their system crawls upon the earth, instead of rising towards heaven. The very names of Reid, Dugald Stewart, and Kant, call forth his unappeasable, almost savage wrath; while Hartley is extolled as the prince of philosophers; and Hobbes, Bentham, and Brown receive their full meed of praise. A salutary fear has held him in check when he speaks of the great living philosopher, Sir William Hamilton, whose name, however, is seldom mentioned, and never with that respect which an honourable antagonist should render.

Why, Locke himself would be puzzled to comprehend the prejudices which have warped Mr. Tagart's mind; first, in his false interpretation of Locke's system; and secondly, in his strange hallucination, that he, with his plump, defiant sensationalism, was the man to wipe the bespattered escutcheon of Locke's fame: to remove or soften those prejudices which have unhappily prevented the candid study and due appreciation of Locke's writings.

We shall now give a few specimens illustrative of the literary taste, the philosophic acumen, and the scholarship displayed in this work, which will amply vindicate the just—not severe—opinions we have expressed. Though, if we had been severe, Mr. Tagart deserves no mercy after the presumptuous and uncouth manner in which he has 'hewed, hacked, and mauled' the reputation of the 'Illustrious Dead.' Thus he describes one child, 'who speaks truthfully, describes faithfully, and reasons consecutively;' and another who 'never reasons but in the fashion of Dame Quickly or the late Mr. Southey.' We suppose Mr. Macaulay's high example will be pleaded in countenance of this pitiable sneer at Dr. Southey; but who will stand godfather to such random and rabid declamation as the following, in which the calm precision of our author's style and the discrimination of his judgment appear. Because Dugald Stewart had eulogized Reid's 'Inquiry into the Human Mind' as the first successful execution of Lord Bacon's plan of study, we have this foaming outburst:—

> 'If to make bold assertions with complete indifference to the proof—to appeal to vulgar prejudice under the title of common sense, in answer to refined and subtle arguments—to declaim, but not to analyze—to substitute metaphors, fancies, prophecies, for an examination of nature, fact, and reasoning—to worship the idola tribus or idola specius; if this be to execute Lord Bacon's plan of study, then indeed, Dr. Reid has executed it. But whoever reads with conscientious care the authors who preceded Dr. Reid, will be only mortified to find to how little purpose they had written—how completely their

excellences and their faults were thrown away on this new candidate for literary distinction and philosophical discovery.'—pp. 29.

Again, he styles this work 'a very shallow and feeble performance, with not enough of argument to enable poor Reid to be called even a sophist.'

The following is his criticism on Hume's 'Treatise of Human Nature'—'It is written neither in philosophical style nor philosophical spirit. Its reasoning is viciously loose, its language miserably inexact. It did not produce, it could not produce, any deep impression on the mind of its readers.' *Quis te, o Grucche, querentem de seditione tulerit?* Has Mr. Tagart amused himself by preparing an epitaph to surmount the grave in which a foreshadowing fear warned him his book would quickly be interred? If so, fitter and happier words could hardly be conceived.

It is thus he writes of the revered Dugald Stewart, who first strove to avert the unjust odium heaped upon Locke, and who therefore deserved better treatment at the hand of our new champion. 'It can hardly fail to be instructive and useful if I exhibit somewhat in detail the statements to which just exception may be taken in Mr. Stewart's dissertation, not to say the unhappy prejudices and serious errors which he has contrived to heap together, within the compass of a few pages, when commenting on Hume and Locke.'

There are two charges, of ignorance and unfairness, which Mr. Tagart has brought against Reid, which we must make to rebound on himself, before we proceed further to show his incapacity for dealing with the simplest metaphysical problems.

In the ninety-ninth page he writes:—'How careless and how incorrect Dr. Reid could be in his representation of Locke, on the very subject of power, active and passive, Sir William Hamilton has shown in his notes to the late edition of Reid's collected writings.' We were certain, from our acquaintance with these notes, that this was an incorrect representation, and on reference found it to be flagrantly so. We wonder how Mr. Tagart could refer his readers to the very page where his misstatement would be instantly exposed and confuted. Hamilton only proves that Reid was guilty of an historical and philosophical blunder,—in supposing Locke's phrase, 'passive power,' to contain a novel and abusive application of the word power. He shows that the distinction made by Locke between δυναμις τοῦ ποιεῖν (*potentia activa*), and δύναμις τοῦ πάσχειν (*potentia passiva*), was established, if not invented by Aristotle, and that subsequently to him the phrase 'passive power' became not only common but classical. But Sir William Hamilton does not say that this error concerning the history and usage of a phrase has vitiated Reid's entire cri-

ticism of Locke, nor could any one save Mr. Tagart have dreamt such a monstrous absurdity, and then fathered his dream on such a wakeful thinker as Sir William.

Again, in his thirty-third page, after quoting the words of Reid, where he says that 'Berkeley's arguments are founded upon principles which were formerly laid down by *Des Cartes*, Malebranche, and Locke, and which have been very generally received;' and that Hume proceeds upon the same principles, but carries them to their full length; and as the Bishop undid the whole material world, this author, upon the same ground, undoes the world of spirits, and leaves nothing in nature but ideas and impressions, without any subject on which they may be impressed. Mr. Tagart annotates thus:—'It would not be easy to find in a treatise of repute on any other science an equal amount of misstatement with that contained in these few sentences. The whole is a presumption on the ignorance or indifference of the reader, characteristic of the mode in which metaphysical and moral science is commonly treated.' On this astounding charge it is well to notice: 1st. That Reid does not bring an insidious and personal accusation against Locke as the author of the scepticism of Berkeley and Hume, which the tenor of Mr. Tagart's remarks would imply, but against that doctrine of ideas which he supposed to be held by Des Cartes, Malebranche, and Locke. It is true, as Sir William Hamilton has proved, that Reid did not understand the Cartesian philosophy as a system, and was so puzzled by the superficial ambiguities which appeared in it, especially by the distinction between the material idea and the mental idea, the one an 'organic motion' in the brain, and the other a representation in the conscious mind; but it is also true that Reid was correct in charging all three with the belief that those ideas which were the immediate objects of perception were *tertia quæ*, distinct alike from the external object and the perceiving mind, and in affirming that this belief was the fundamental dogmatic position on which Berkeley and Hume had erected their systems. It is a marvel to us how Mr. Tagart, with Sir William Hamilton's article before him, the thought of which ought to have made him tremble, has yet dared to repeat and to exaggerate the unfounded calumny of Brown, after it had been exploded into atoms, and its author covered with disgrace. Moreover, it is rather ludicrous to hear our author, who quotes dictionaries and translations *ad nauseam* as his authorities, speaking of the presumption and misstatements of Dr. Reid. But, 2ndly; We now approach the most enormous and incomprehensible defect of this work. Mr. Tagart purposely sets out with a view to search into the truthfulness of Reid's statement (quoted above), that Berkeley and Hume built upon principles of Locke, in order to trace the origin of the pre-

judices which he is going to expunge; and yet there is not a single, most remote allusion to those principles which were held by Locke, though they were not peculiar to him, and which the sceptics assumed as the premises of their reasoning—'narras vix credibile!' It is easy to impeach Reid's candour and ability; after he thus wilfully and impertinently ignores those facts which manifest and defend them. When we consider how widely information on this subject has been diffused by manuals of the 'History of Modern Philosophy,' we cannot even surmise the cause of this unexampled omission. Surely it could not be an overweening desire to exalt his master, the *magnus veri sacerdos.*

Because Berkeley animadverts upon some opinions of Locke—e. g., upon general terms, and upon the distinction between the primary and secondary qualities of matter, Mr. Tagart thinks this is sufficient evidence 'that it is a great misrepresentation to throw the onus of Berkeley's idealism on the English philosopher.' Now, we deny that Reid threw the onus particularly on Locke, but on the dogma of representative ideas which was held by Locke, with nearly all antecedent philosophers. Can Mr. Tagart prove that Locke did not hold this doctrine. If he could, he might fairly blame Reid; but because he cannot, he will not deign a reference to that doctrine, upon which the entire controversy hinges itself. Locke believed that the ideas of which the mind was alone conscious, and of which all our knowledge consists, had an existence separate from that of the external bodies they represented. Hence, Berkeley continued, we have no right to believe in the existence of an external world, of which we cannot by any possibility have an inkling of knowledge—*voilà tout!* The premiss lies in the doctrine of representative ideas, which was incorporated into the system of Locke. The conclusion is evolved with unavoidable certainty by Berkeley. Reid has reiterated again and again in what sense he believed the scepticism of Berkeley and Hume to be contained in the current philosophy of their time, of which Locke was the chief expositor; and we believe Mr. Tagart is absolutely without precedent in the history of metaphysical discussions, when he so pertinaciously avoids the prominent—the sole question at issue, which must have stared him in the face, if ever he opened Reid's works, in order to heap such contemptuous charges against that philosopher. His work gives no sign of careful reading, or of capacity for philosophical analysis and exposition. The style in which it is written is very magniloquent, as we might expect from the author who informs us that a 'good dictionary is the best metaphysical teacher.' There is no lack, therefore, of highly-coloured words: the dust is ever flying in one's face. But we protest against the

uncandid rancorous spirit in which he assails his opponents, and we pity the tottering imbecility which could not walk along a straight path to reach the object he had set before him as his mark. Locke is forgotten among the other deities whom Mr. Tagart had to dethrone or to worship, and when found he is most shamefully abused by his friend.

We hasten to quit Mr. Tagart, and shall devote the remainder of our space to examine carefully the position of Locke in the development of philosophy, and to balance the antagonistic judgments given upon him. We rejoice in this disputation—recently revived—which will entice our young scholars to ponder these controverted writings whose authority is deemed so important, and we are convinced that the robust and independent thinking of Locke will lead them to the soundest conclusions, especially if they carry with them those refined, but necessary distinctions which have been popularized since Locke's time, and which give a crystallized form, clear, sharp, and solid, to the material of his philosophy. It is absolutely imperative that we judge of his work on the Understanding, bearing in mind both the condition of metaphysical inquiry in that age, nnd the method in which Locke devoted himself to its production.

When Locke wrote, the speculations of mental philosophy were not so precisely defined as they are now, and consequently those words had not been coined which render so exact to modern thinkers the object of their inquiries. But further, whatever had been the accuracy and abundance of philosophical language, the resolution which Locke so persistently carried out—viz., to evolve his system in true Baconian style from a diligent introspective survey of his own mind, without troubling himself with the theories of others, forbade his acquaintance with those methods and definitions even then employed, which would have opened up to him the *nodi* of controversy that needed to be untied, and would have given exactness and simplicity to his analysis of them. How often we desiderate in Locke the exact technical language, which even the philosophical literature of his age would have supplied to him. His students, therefore, must gather up the thoughts which he has expressed in his loose and vacillating, because untechnical language, and arrange them under the rigorous and happy definitions which are now current and classical in philosophical writings.

We hope thus to judge of his work, and to present a clear view of the main positions of his system, so far as they are expounded in his second book.

The very reverence we cherish for Locke's manliness and love of truth will preserve us from a servile adoption of that unguarded phraseology which we are convinced he would now himself, if

living, abandon and condemn. 1st. He asserted in the most peremptory and decided manner, the independence of the human mind, and the earnestness with which he did so must ever preserve him from the charge of sympathy with the succeeding philosophers of the 'sensualistic' school in France and England. It must be confessed that the illustrative metaphors which adorn and complicate his reasoning are worded too indiscriminately, and might be employed by these men, whose sentiments he would have abhorred. Nay, further, we may concede with Cousin, that his constant reference to sensations as originating (in whatever sense he employed this word) the conceptions of the mind, even those deemed most recondite from sense, may have encouraged them to abolish that independence he so vigorously asserted; and to represent the mind as the mere conservatory of impressions, whether intellectual or emotional, received from the senses. Cousin, however, admits that Locke did not confound, but explicitly distinguished sensation from the faculties of the soul; and, after this admission, it seems preposterous to entitle him the father of the sensualistic school, whose fundamental dogma he expressly repudiated. The subsequent remark of Cousin, that he makes these faculties play a secondary and insignificant part, will receive no credit from those who are willing to interpret Locke liberally, and who remember that all the innumerable notions, by far the largest proportion of the mental stock which are called by Locke 'ideas of relation,' are formed, according to him, by the mind itself, are originated therefore by those very faculties which Cousin says he degrades to play an insignificant part.

From his anxiety to expose and confute that bugbear theory of innate ideas, which it is doubtful that any philosopher ever maintained, Locke declares that he can trace the origin even of these ideas to sensation and reflection. But we hope to demonstrate that with Locke, the word 'origin' did not only mean the source of the existence of an idea, but also the occasion on which, in his own phrase, the mind 'got' the idea. In fact, no better proof of this can be given than in Locke's statements respecting these ideas of relation. He repeatedly affirms that the mind by its own energy, and according to its own laws, brings two ideas together, and determines their relation; that, consequently, hese ideas of relation, these judgments, have their proper source in the independent action of the mind; and yet he concludes by saying, 'Though there be a great number of considerations wherein things may be compared with one another, and so a multitude of relations, yet they all terminate in, and are concerned about those simple ideas of sensation and reflection, which I take to be the whole materials of our knowledge.'

This latter phrase can only mean that experience supplies the disordered ὕλη of knowledge, upon which the mind impresses its own forms, and so reduces the materials of experience into the order necessitated by its original constitution. For it is these judgments, these ideas of relation, that weave together the primary elements of knowledge into the complex, strangely patterned texture which the philosopher finds it so hard to unravel; and these ideas of relation, according to Locke, are the product of the mind's activity, and are not communicated either by sensation or reflection.

Sir William Hamilton has rightly observed that Locke pronounces sensation and reflection to be the exclusive sources, but not the exclusive elaborators of our ideas. Now, it is evident, that in the process of elaboration which the mind performs upon the elementary ideas derived from the two great sources of experience, new ideas are constantly evolved, such as those of proportion, equality, &c., which can have their origin only in the mind itself. Locke repeatedly admits this, though, because the new ideas are concerned about the simple ideas of sensation and reflection, he professes, in direct contradiction to what he elsewhere affirms, that they may also be attributed to these sources. The contradiction is apparent to us, who have been so carefully taught to distinguish the occasion of the manifestation of an idea from its proper source. But Locke had not even imagined this distinction. He was satisfied respecting any idea whatsoever, when he found the occasion of its rise in consciousness, that he had discovered its origin. Assuredly, Locke would never have sanctioned the language of Mr. Tagart, who tells us of 'conceptions, judgments, or principles coming to the mind through the senses.'

2nd. Locke considered reflection to be an empirical and adventitious source of knowledge, just as much as sensation; hence the elaborate defence of Locke, which has been made by Dugald Stewart, and quite recently by Henry Rogers in his most admirable Essay on Locke, grounded on the fact that Locke believed in *two* different fountains of our ideas, sensation and reflection, must fall to the ground. We have been surprised at the laborious ingenuity with which the latter attempts to show the 'reflection' of Locke to be almost equivalent to the νοῦς of the Greeks and the *vernunft* of the Germans, a *locus principiorum;* and consequently that Locke, in laying such stress on the two sources of knowledge, has apprehended, however dimly, the doctrine of Kant and Cousin, who insist on the necessity of admitting two elements, one drawn from experience, and the other from the formative laws of the mind, in order to give a complete account of the origin of our ideas. Nothing can be further from the intention of Locke in his division of experience into its two sources. We

believe that he would have embraced the doctrine of Kant and Cousin, had it been proposed to him; and that we must accept this doctrine, in order to elucidate and harmonize the seeming inconsistencies of his book. But we must not forget that Locke's professed object was to trace the origin (in his indefinite sense of the word) of all our ideas to experience, and that he regarded sensation and reflection to be only two modes of this experience. Hence he singles out those very conceptions which Descartes and Lord Herbert then, and Kant and Cousin since, would term innate, in order that he might track even them to one or other of these sources.—'Whence,' he asks, 'has the mind all its materials of reason and knowledge? To this I answer in one word. From experience: in that all our knowledge is founded, and from that it ultimately derives itself. Our observation, employed either about external sensible objects, or about the internal operations of our mind, perceived and reflected on by ourselves, is that which supplies our understanding with all the materials of thinking. These two are the fountains of knowledge, from whence all the ideas that we have, or can naturally have, do spring.' Nothing, then, can be plainer than the meaning of the word 'reflection,' in the philosophy of Locke; and however vacillating he may be in his ordinary language, he adheres with unfailing pertinacity to his intelligible and precise meaning of this word. Moreover, this is the proper signification of the word, which 'means, *ἐπιστροφὴ πρὸς ἑαυτό*, the reflex knowledge or consciousness which the mind has of its own affections. (See Sir William Hamilton's note on Reid, p. 347.) It is vain, therefore, in Cousin, to say that Locke ought to have used consciousness instead of reflection. Locke was too clear a thinker to commit such a blunder as that. The term consciousness represents the whole series of mental phenomena, the origin of which he had set himself to discover. What marvellous folly it would have been to have said, that the source of the facts revealed in consciousness, was consciousness; and then, with crowning absurdity, to have added another superfluous source—viz., sensation. The question at issue between Cousin and Locke is not, as Mr. Rogers seems to suppose, 'Do all our ideas come from sensible experience? but, 'Do they come from experience alone, of whatever sort it is?' and Locke, if we were implicitly guided in our judgment by the dogmatic announcements at the commencement of his second book, must be held to reply that they do. We shall afterwards show that Locke does virtually admit all that rationalists advance, and that these opening, most defiant paragraphs, when explained in his subsequent expansive treatment of the subject, really mean what they believe—viz., that experience is either the direct cause of the introduction of

new ideas, or the necessary condition of their appearance, even if they be created by the mind itself.

But if Locke be interpreted by these first sentences alone, in which he declares that there are two sources of ideas, sensation and reflection, he then pronounces most emphatically against the doctrine of rationalism, or any approximation to it.

We respectfully suggest, therefore, to Mr. Henry Rogers, that in this particular he has misapprehended the difficulty which students feel in reading and systematizing Locke. Mr. Rogers says—'It is not possible to give any interpretation of these numberless passages, in which Locke so distinctly affirms his belief that there are two different functions of ideas, sensation and reflection, on the hypothesis that he really resolves them into one.'

Now we submit to Mr. Rogers that the main point of dispute in the controversy between the two antagonistic schools is this—Are our ideas educed from experience alone? and that it is of no moment whether we divide experience into two or forty kinds. Some extreme controversialists may, in the language of Mr. Rogers, 'assert that Locke has virtually resolved all our knowledge into the one source of sensible experience;' but the assertion on which the students of Locke stumble is that which he makes for himself—viz., 'that all our knowledge is derived from experience.'

Reflection and sensation stand with him on the same level. Their authority is the same; they both reveal phenomena of existence,—the one as an internal sense, the other as an external sense. These phenomena are alike fluctuating and contingent in either case, and it is impossible from experience merely, whether it be experience of the operations of the mind or of sensible objects, to attain necessary truth. In order to define yet more indisputably his meaning of reflection, Locke recounts all the ideas we derive from that source—viz., the ideas of perception, memory, abstraction, &c. Now, the existence of any of these mental faculties is as much an empirical and adventitious fact as the existence of a material object,—e. g., a house, or the sun. We do not conceive that there is an absolute necessity for its existence, arising out of the very conditions which render our conception of it possible. It is impossible for us to conceive space or time obliterated; but we can easily imagine that any faculty of the mind, of which we are made acquainted by reflection, might be obliterated, or that the mind itself might be annihilated. All the facts that are revealed to us from the two sources of experience can be only contingently known. Their existence can be guaranteed to us only so long as the experience is continued; with them the esse is involved in the percipi.

But Cousin and Mr. Henry Rogers believe in an innate source of ideas, which communicates to our consciousness necessary and eternal truths, the reality of which, after they are once apprehended, is deemed to be indestructible; and Mr. Rogers' strenuous effort to impress his readers with the fact that Locke believed in two sources of ideas does not bring Locke one whit nearer to this latter doctrine held by himself and Cousin; for both these sources are the 'two fountains from which experience furnisheth the understanding with ideas.'

The defence of Locke, when we would show his fundamental agreement with the rationalism of Reid and Kant and Cousin, must therefore be shifted from these unlucky paragraphs, wherein Locke announces as the 'thesis' of his book, that all our knowledge is derived from experience. Nay, if this defence be accomplished at all, it must be by proving from the rest of his book that these paragraphs are indefinitely, and so erroneously worded, and that he included in his meaning of the phrase 'origin of our ideas,' the occasion on which they were manifested in consciousness, though chiefly educed from the mind itself. This defence can be made, and only this explanation can give consistency and simplicity to the otherwise confused and irreconcilable statements of his work.

3rdly. If we bring ourselves *en rapport* with the circumstances and the design of Locke when he executed his work, we shall clear away many of the difficulties that encumber its study. We must remember that the refined analysis to which the phenomena of consciousness are subjected in our time, was unknown to him or to his age. It has taken the labours of Locke himself, of Reid, Stewart, Brown, Kant, &c., and the incessant controversy of the 'schools,' to form and develope the analytical method—the appliances of definitions and terms—which we now enjoy. It takes a long time before the subtle, shadowy, and intricate distinctions of mental phenomena begin to manifest themselves to the piercing eye of the analyst; and there is no more absorbing historical study than to trace the progress of this metaphysical analysis. New terms are happily invented when an old word that fermented with perpetual discord bursts, and is discovered to contain two different meanings, and is either lost in the explosion, or re-appears with a novel and limited significance. New mental processes are also discovered, and theories rudely formed and incautiously expressed at first, are modified and exactly adjusted to the facts they are intended to explain. It is in this way that Locke appears to confound, in the word 'origin,' those two meanings of occasion and cause which have been distinguished and clearly defined by modern philosophers. This definition gives an immense advantage, in point of accuracy and

simplicity, to our inquiries. The want of it makes Locke seem to grope in confusion and darkness. It was his groping, however, that brought us to the light.

The key-note of Locke's philosophy is found in the first book. The drift of the subsequent books manifestly is to form a prolonged argument against the doctrine of innate ideas. This doctrine, as he apprehended it, was not the doctrine maintained by its adherents now,—viz., that the mind, with its independent powers, and regulated by its own laws, impresses its own form upon the chaotic ὕλη of experience, and that, in this process, ideas are evolved which do not come from experience but from native sources of the mind. That, therefore, the mind, in its working upon the materials supplied by experience, generates ideas which did not exist, save potentially, in the mind before, but *were* suddenly awakened in consciousness on the first communication of experience. The two classes of ideas, therefore, come into existence simultaneously in the consciousness. The first act of knowledge, and every subsequent cognition, and judgment, and imagination, involves them both. Not, therefore, innate ideas, but innate capacities to form ideas, is the doctrine so universally adopted now.

Very different, however, was the doctrine which Locke so earnestly combated,—viz., that the mind was ushered on the stage of being, endowed with principles articulately expressed,—principles both to regulate speculation and practice; and consequently, that before the first intimations of an external world, through sensation, ideas were legibly impressed on the mind, and manifested in the embryo's consciousness. This doctrine seems fanatical to us now, and unworthy of the lavish expenditure of reasoning with which Locke demolished it. But though it was so extremely absurd, yet Locke made it his chief object in his second book utterly to expose and extinguish it. These are his words at its commencement:—'I know it is a received doctrine that men have native ideas and original characters stamped upon their minds in their first being. This opinion I have at large examined already; and I suppose what I have said in the foregoing book will be much more readily admitted when I have shown whence the understanding may get all the ideas it has, and by what ways and degrees they may come into the mind; for which I shall appeal to every one's own observation and experience.'

It is noticeable from the language of this passage, and the same fact is apparent throughout his work, that Locke had not a very accurate and settled notion about the origination of ideas; he employs an immense number of words to describe it, and he

employs none of them steadfastly or with precision. He writes like a man of common sense, whose mind was untinctured with any scholastic method, but whose shrewd observation had sufficed to discover the absurdity of innate ideas, as he imagined philosophers to hold them. It was sufficient for his object to show that no ideas could be present in the mind before the ideas of experience, and that all ideas whatsoever had such connexion with ideas of sensation and reflection, that but for the existence of the latter, the former would never have existed. What this connexion was, he never minutely canvassed and analysed. For the sake of his argument the fact of such connexion was all that he had to establish. If it were proved, the doctrine of innate ideas was exploded. But, even if it be granted, and it will be universally granted, that the origin of all ideas is found in experience—in the sense that without experience there would have been no ideas in the mind; the further question may yet be raised, which never mooted itself to Locke's mind,—Are all our ideas in themselves ideas of experience, or are some of them produced by the mind, but only on occasion of certain communications of experience? This double meaning, this subtle distinction involved in the word origin, was not perceived by Locke, or he did not care to pronounce upon it, since it did not affect his argument against innate ideas. If experience be acknowledged as the necessary condition for the formation of our ideas, Locke's position is as safe as if we affirm that experience is their only source. To this question, therefore, which is the *vexata quæstio* of philosophy, we find no simple, direct, and unqualified answer by Locke. We deny that his employment of the word 'origin,' where he says that experience constitutes the origin of our ideas, decides the fact of his opinion. It was an admirable word to express his thought, that experience was the 'initium' of consciousness, on the first touch of which the mind awoke to apprehend ideas; and that no innate ideas were impressed upon it from a beginning prior to that. The ambiguity of the word did not appear in his application of it; but since it is now discovered to be ambiguous, and can be used in this application with equal propriety by the disciple of Cousin and the disciple of Condillac, we must expend further study on Locke's work to know how he limited or extended its signification. We have already declared our opinion, formed after repeated study of his work, that the real purport of Locke's argument, had he fully expressed himself in modern and technical language, was as follows—'That experience was required to initiate all our ideas into consciousness, being of some the proper source, and of others merely the occasion of their manifestation.'

We readily admit that Locke did not distinctly perceive what has become patent through modern discussions—that the mind itself might be a source of ideas, and yet never have presented them in consciousness till it came into contact with matter, and received its first sensation under the conditions of its own constitution; and thus two ideas—one the complement of the other, and necessary to each other's manifestation, were born together. Some passages, indeed, contain an explicit acknowledgment of this doctrine; but he seems to stumble on them accidentally. Most assuredly, he did not clearly apprehend and enounce this doctrine as affording the true solution of the genesis of our ideas.

We shall prove, however, that in attempting to resolve all ideas to their first origin in experience, his language constantly assumed a belief in this doctrine; that he could not, and did not, analyse them wholly into products of experience, and therefore implied, even when he did not confess his belief in a higher source of ideas. His faith was blind; he wanted to show that there were no ideas before experience, and that, somehow or other, all of them were derived from that source; he also saw that many ideas were such that no experience could impart them—and yet he had not ascertained the only method of reconcilement between these sound, but seemingly antagonistic positions. Hence his alleged vacillation and contradiction. Had his blind faith been enlightened by a steady perception of the subtle distinction between occasion and cause, which he confounded under the vague word 'origin,' all his confusion and inconsistencies would have disappeared.

We hastily gather up our proof of this interpretation of Locke's purpose and argument, which we are convinced will disengage as before most of those difficulties which perplex and annoy those who have commenced to study his philosophical system.

We are less anxious, however, to assemble a great number of passages in defence of Locke against the charge of sensationalism, since we can refer to the accumulated evidence which Mr. Rogers has so admirably selected and arranged; all of which goes to establish the explanation we have given above. We shall only eliminate a few points of evidence, in that order which best illustrates both Locke's belief and his difficulty, because that belief was not explicated and distinctly pronounced in his philosophy.

I. On the following passage from Locke: 'He would be thought void of common sense who asked, on the one side, or on the other, went to give, a reason why it is impossible for the same thing to be, and not to be,' Sir William Hamilton justly

remarks: 'In admitting, as he here virtually does, that experience must ultimately ground its procedure on the laws of intellect, Locke admits that intellect contains principles of judgment, on which experience being dependent, cannot possibly be their precursor or cause.'

II. The following passages, referring to those notions which form the crucial instances of the controversy between the Sensationalists and Rationalists, most clearly evince the substantial identity of Locke with the latter school:—

α. 'Everything,' says Locke, 'that has a beginning must have a cause. This is a true principle of reason, or a proposition certainly true, which we come to know by the same way; i. e., by contemplating our ideas, and perceiving that the idea of beginning to be is necessarily connected with the idea of some operation, and the idea of operation with the idea of something operating, which we call a cause. Then the mind is confessed to originate an idea, not contained in these ideas contemplated, and which has the attribute of necessity which can never be given from experience.

β. 'Because,' says Locke, 'we cannot conceive how simple ideas of sensible qualities should subsist alone, or in one another we suppose them existing in and supported by some common subject, which support we denote by the name *substance*. Here, again, the mind forms a supposition, and in doing so, originates an idea, which by no possibility could come from experience which only reveals phenomena. The idea of substance is formed by the mind, and is believed to underlie all phenomena, as the necessary condition of their appearance.

γ. 'The duties of the moral law arising from the constitution of man's very nature, are of eternal obligation.' Here, again, Locke distinctly confesses that the mind, on contemplating the voluntary actions of man, pronounces a necessary judgment which is rendered according to its own constitution, and is admitted, therefore, not to be contained in the facts themselves presented by experience.

III. We wish to show further, that in the very analysis—which Locke gives in his Second Book of what he calls the abstrusest ideas—e. g., space, power, &c., he always implies something beyond what he has distinctly expressed. He endeavours to reduce them to experience, but he finds it impossible, and his language constantly implies a belief in an innate source of ideas, which experience only opens up and calls into play. While, therefore, he begins his analysis by observing, 'that even large and abstract ideas are derived from sensation and reflection, being no other than what the mind by the ordinary use of its

faculties, employed about ideas received from objects of sense, or from the operations it observes in itself about them may and does attain to;' it will be seen that, according to Locke, the mind being thus employed, communicates altogether new ideas, which are not given from sensation and reflection.

a. Locke says, in his first letter to the Bishop of Worcester—'For general ideas come not into the mind by sensation or reflection, but are the creatures or inventions of the understanding, as I think I have shown; and also how the mind makes them from ideas which it has formed from sensation and reflection; and as to the ideas of relation how the mind forms them, and how they are derived from, and ultimately terminate in ideas of sensation and reflection,' I have also shown.

This is a most important and authoritative passage: it might be called a proof-passage—a *locus classicus*, for it gives us the key whereby to interpret the indefinite language of Locke. General ideas he declares to be the creation—the invention of the mind itself. The source, the true cause of their origin, therefore, is in the mind itself; and yet, he adds, it makes them from ideas of sensation and reflection. Now, there is only one possible sense in which this latter sentence can be consistently explained in its connexion with the former,—viz., that these ideas furnish the occasion on which the mind creates or invents the general ideas; his reference to ideas of relation formed by the mind on occasion of the two ideas being contemplated by it, and the elucidation of his meaning that immediately follows in his account of the origin of the idea of substance incontestably prove that this is the real meaning which Locke would convey by his loose and untechnical expression: 'the mind makes them from ideas of sensation and reflection.'

β. 'Existence and unity are two other ideas,' he says, 'that are suggested to the understanding by every object without, and every object within.' This is just the language that would be adopted by a rationalist: it could not be used by a sensationalist. These ideas are not given by experience, but merely suggested; we must therefore find their proper source, from which they arise at the appropriate suggestion elsewhere—viz., in the mind itself.

γ. Power, he says, is another of those simple ideas which we receive from sensation and reflection; and yet in the explanation that follows he makes it clear that the mind forms this notion of itself, on the occasion however of those ideas being presented. For he adds, 'observing in ourselves, that we can at pleasure move several parts of our bodies which were at rest; and the effects that natural bodies are able to produce in one another occurring every moment to our senses, we both these ways get the idea of power.' The moving

of parts of our bodies, of which we are conscious by reflection, and the changes in external objects, of which we are conscious by sensation, cannot be supposed to constitute the idea of power, but on occasion of them the mind, as Locke says, 'gets the idea from itself.'

δ. At the beginning of chapter 26, he says—'In the notice that our senses take of the constant vicissitude of things, we cannot but observe that several particular qualities and substances begin to exist, and that they receive this, their existence, from due application and operation of some other being. From this observation we get our ideas of cause and effect.' If this passage be compared with that we quoted before upon the origin of the idea of cause, it will be manifest that when Locke affirms that we get our idea of cause and effect from this observation of phenomena, he means that the mind forms the idea whenever this observation is made. The mind, he informs us, perceives the relation of cause and effect, which is not contained in the mere fact of sequence; and also attributes necessity to the relation it has determined to exist.

ε. This explanation tallies also with his account of the origin of the idea of space. Locke first shows that it is derived from the sensations of touch and vision, which can only reveal to us the qualities of body. But he proceeds immediately afterwards to demonstrate that this idea, derived from the sensible qualities of body, is essentially different in all its qualities from the idea of body. In saying, therefore, that the idea comes to the mind, or that the mind gets the idea from sight and touch, he can only mean that they furnish the occasion on which the mind forms an idea entirely different from the ideas which they themselves supply—viz., those of the qualities of body. It is impossible that the idea of space, being wholly different from that of body, can yet be educed from it as its proper source.

These instances show that the language of Locke, even when it is his express business to educe ideas from experience, can only be harmonized and rationally interpreted by the admission of another source connate with the mind itself. The distinct perception of its existence scatters all the mist that spreads over his pages, and pours vivid light upon his otherwise ambiguous system. To construe his system intelligibly we must allow his phrase, 'origin of ideas,' and the cognate phrases, to include the occasion as well as the cause of the formation of our ideas.

In his account of the origin of the idea of personal identity, he adopted, and rigorously adhered to, the method and doctrine of the sensationalists; and his chapter on this subject they may claim as their own. He makes the fact of our identity, so far

as we have any conception of it, to depend on the existence and continuance of the faculty of memory, instead of making every exercise of memory an occasion on which both the idea and belief of its own identity, are consciously revealed to the mind, though they constitute the *à priori* conditions which make memory possible, and on which therefore it depends.

In this instance, therefore, Locke makes the fact of identity to be as contingent and changeable as that fact of memory, which in his opinion constitutes its essence. How different is his account of the other ideas of space, time, power, &c., when, though he traces their origin in like manner to experience, he afterwards shows how they vary in their absoluteness and necessity from the ideas which gave them birth. His errors, therefore, respecting the idea of identity, are a foil to illustrate the correctness of his opinions respecting the origination of the other ideas he has named.

IV. We have already referred to Locke's language upon ideas of relation, as corroborating our views of the just interpretation of his fundamental doctrine; and this defence might be elaborated so as completely to vindicate his rationalism. The faculty of intuition is, with him, the source of necessary ideas. The belief in that constitution of the mind which determines and gives the conviction of necessity to its judgments involves all that Reid, Stewart, Kant, and Cousin would mean by their different expressions, 'Laws of Belief,' 'the Forms of the Understanding,' and the 'First Principles of Knowledge.' These necessary judgments belong to a different class of ideas from those primary notions; e.g. of Space, Time, Existence, Substance, Identity, and Power, which are disengaged by the first and by all subsequent phenomena of experience, and which form the prior and necessary logical conditions of their existence. Locke admits that they arise from the mind, as an independent source of ideas, though he also says, in his usual indifferent manner, that they are derived from ideas of sensation and reflection, because they 'terminate in and are concerned about them.'

All the judgments of the mind possess an equal certainty. This has been acknowledged by Locke, as shown by the wide significance he has given to the word intuition; but it has not been apprehended, we think, by Professor Whewell, John Stuart Mill, and Henry Rogers, in their discussions upon these mental judgments, especially in connexion with that mathematical axiom, that two straight lines crossing one another will never meet again.

It is true that the mind passes an instantaneous and inevitable judgment on the relation of these two lines; but not more so than in the comparison of two material objects, one of which is pronounced to be larger than the other. The intuitive judgments of the

mind are always direct, and in themselves absolutely certain. The universality and necessity that are attributed to the one of these two judgments, and not to the other, belong to the matter on which it is pronounced, and not to the mental act of affirmation. If the two material objects that are compared by the mind were eternal in their duration, the judgment of the mind would be eternally necessary: they would have the same proportion to one another for ever. But they are not; and the judgment is given contingently on their existence. So there are no actual straight lines bisecting one another, regarding which the mind will pronounce it to be impossible that they will meet. Mr. Rogers' language, therefore, must be modified, when he says 'a man sees two lines which intersect, and he is willing everywhere to stake his life that they will never meet again, and never inclose a space.' No man will wager his life on such a bet, for a gentle curvature, inappreciable to the finest vision, would soon twist these lines to enclose a space, and tighten a fatal cord round his neck.

But the mind, by abstraction, conceives of two straight lines, from which it first abstracts the possibility of bending, and then safely predicates of them—that they will never meet. These straight lines have no actual existence, else this necessary judgment could not be given. Geometry must first make definitions, which are mental abstractions, and then it may pronounce its universal axioms. We are glad, however, to be able to sum up our argument under this head by the following conclusive remark taken from Mr. Rogers's Essay: 'He who admits these necessary truths (viz., these intuitive judgments), can hardly be supposed to deny that the intellect itself is, from its very structure, an independent source of ideas.'

We now conclude our article. We thank Mr. Tagart for furnishing the opportunity of making these remarks upon the aim of Locke's work, and the result to which a fair and liberal interpretation of it must lead us.

In order to confute the doctrine of innate ideas, Locke announced and sought to establish his thesis, that all ideas were derived from experience. He had not observed the just but refined distinction between the occasion and the cause of the manifestation of ideas; and hence the ambiguity and inconsistency which prevail through his work. So far as his main object was concerned, it was of no consequence that he should distinguish between these two meanings, hidden and confounded under the word origin which he employed. He was required to prove, and he did so most incontrovertibly, that without experience there would have been no ideas in the mind; and that every idea may be traced back to some experience which initiated

it into consciousness; this argument was triumphantly established. In later times, however, the grand subject of controversy has been—Are all our own ideas given from experience as their only source; or does experience furnish the occasion, on which some ideas it could not impart are evolved from native sources in the mind? Upon this question Locke has not distinctly pronounced. The mere language of his work is that used by sensationalists, and this would lead us, on the first glance, to believe he had adopted their theory. But, on further investigation, we find confessions that are tantamount to an explicit denial of the sensational dogma; and we also find that his language can be only intelligibly and consistently interpreted when we believe him to regard experience as the occasion as well as the source of ideas, and not the latter only. In either case his argument is valid as against innate ideas. He confounds the two meanings of the word 'origin' in the popular and variable phraseology he adopted; but it is evident he included both, and that his system is one of philosophic rationalism, and not of sensationalism.

ART. VIII.—*Constipation, its Theory and Cure; embracing the Physiology of Digestion, and the Injuries Inflicted by the Employment of Purgatives.* By John Epps, M.D. 8vo. pp. 420. London: Piper, Stephenson, & Spence.

THE age in which we live may be properly called an age of innovation and reform; a spirit of independence seems to be abroad, which refuses to bend to the opinions of bygone days, and seeks to establish for itself a reputation which is based on the foundation of truth rather than on the shifting sands of conventional opinion. Thus the various institutions of our country have in turn passed under review, and been subjected to alterations, which it is hoped by the enlightened and the wise, will show themselves to be improvements. The universities have been subjected to this ordeal, and change in the administration of their statutes and laws has been the invariable result. The courts of justice have in a similar manner been revolutionized and reformed by the same spirit, and everybody seems prepared to admit, that, in the nineteenth century, with its manifold advantages, the faults of the past should be corrected, and the improvements of the present generation should be placed upon a sure and steady foundation.

Now, when these facts are prominently brought before our

notice, and our approval is elicited by the changes which have already taken place, can we be justified in supposing, that any one class of men should by their talents or attainments have so far surpassed their fellow-men, who are engaged in a different sphere, as to have encased themselves in a breastwork which defies all alteration for the better, and which declares that they have acquired this encasement, because in their particular branch of science the acme of perfection has been obtained. Such a supposition would be unwarranted by past experience; we therefore conclude that every science, no matter how deep, may yet be the subject of progress, and that the speculations arising out of, and the deductions drawn from facts, which have been elaborated by any unprejudiced mind, are entitled to a fair investigation, and demand of all impartial inquiry.

The subject, then, to which our attention is now particularly directed is that of physic, and the inquiry to be entered on is, whether the *administration of purgatives is in any case necessary*, or whether it is not in all cases injurious. Dr. Epps, in the elaborate work under consideration, is of opinion that purgatives are in no case necessary to the cure of disease, but considers them at all times prejudicial to the welfare of the patient. He commences the investigation of the subject by showing that purgatives, as a general remedy, have been known for only fifty years, and quotes from the work of Dr. Hamilton, the author and chief advocate of the purging practice, to prove that, in his day, the system of purging was considered novel. At page 188, Dr. Epps makes the following extract from Dr. Hamilton's work, entitled 'Observations on the Utility and Administration of Purgative Medicines in Several Diseases:'—'As the doctrine which I maintain with respect to the exhibition of purgative medicines may have the appearance of novelty;' from which mode of expression it is apparent, that the use of purgatives as a means generally to be used in the treatment of disease was claimed by Dr. Hamilton as a novelty, and as such to require defence. From Dr. Hamilton's day to the present time, the practice has been rapidly spreading, until it has now become almost universal, and an aperient medicine forms a necessary ingredient in the cure of every disease. The question necessarily proposes itself as to the mode of accounting for the rapid spread of an opinion, which fifty years ago was novel, if the administration of the medicine recommended be not necessary, indeed impedimental to the recovery of the patient. And the answer returned seems to be this, that, as costiveness and constipation enter as symptoms into some stage of almost every disease, and as purgative medicine relieves these symptoms, though probably it cannot remove the cause producing them, the alleviation is considered a boon,

and a step made in the direction of cure, the purgative was hailed as a blessing, and ranked amongst the remedies of the first order by those who, for want of a better, were compelled to be thankful for what they had. Now, Dr. Epps does not deny that constipation is a symptom which manifests itself in almost all diseases, but he asserts that purgative medicines are not the scientific, the safe, or best medicines to use in removing it. At page 172, he states what purgatives are, and in what way they act injuriously upon the human frame :—

'Purgatives,' he says, 'are medicinal substances that irritate the intestinal tube, and cause by their action a *destruction of the natural form* of the fæcal evacuation, a fact of itself demonstrative of the unnaturalness of their action. Artificial purging is induced by the employment of purgatives; a purgative is strictly an irritant to the bowels. It is a foreign indigestible body, and poisons the intestinal membrane. The stomach and the bowels, to protect themselves from the poison, hasten to expel the poison from their cavities, and pour out a large quantity of fluid, in part the effect of the irritation from the poison itself, in part it may be the effect of an effort of nature to sheathe, by pouring out an augmented mucous secretion, the intestinal membrane itself from the action of the irritant.'

In other words, the doctor maintains that the effect of a purgative is to produce disease in the intestinal canal, and he justly reprobates the folly of curing one disease by the substitution of another. He says :—

'Purgatives are purgatives, because they cause disease—i. e., they irritate, because they are poisons to the intestinal tube: they excite unnaturally, and, like all bodies exciting unnaturally, they inflict injury. By this excitement they cause the bowels to have an excessive action, or, to use the usual language, deceptive indeed of the true condition induced by the purgatives, they cause the bowels to be opened. A reaction subsequent to the excitement invariably occurs; and the intestines pass, the excitement not being kept up, into a state of inaction. Hence constipation almost invariably follows purgation. Hence the necessity, on account of the induced inaction, of increasing the dose of the purgative, in order to excite the intestine to a fresh action.'—p. 175.

Now, to any unprejudiced mind, the absence of all scientific precision in this mode of treatment must be apparent. A disease, or a symptom of a disease, appears, and the physician consulted pronounces it constipation; he prescribes a remedy for its removal which induces an exactly opposite disease, viz., that of diarrhœa; the medicine he gives does not produce the healthy action of the bowels, but merely changes the form and name of the disease, so that the patient has only the satisfaction of knowing that whereas he was suffering from a confined state of the bowels, he now has to endure the inconvenience of their being

relaxed. What compensation, then, it may be asked, does he receive for the fee which he has given to his medical adviser? He is told to wait and see what the curative effect of the medicine will be after the more violent and injurious effect is over. He does so, and to his great dismay, finds the newly-induced disease, diarrhœa, subside; but in its stead, the return of the old complaint, constipation. Again the doctor is consulted, again the purgative is administered, and the same disappointment upon the failure of the remedy to effect any permanent good. Thus the patient is left to choose which he prefers of the two diseases, diarrhœa or constipation; and according to the decision arrived at, to take or reject the drastic purgative—but whichever may be his decision, he *is still the subject of disease*—and still feels the inconvenience arising from the impotence of this system of medicine to give him the relief which he requires. Besides the inability of purgatives to remove the disease complained of, Dr. Epps maintains they are positively injurious to the patient who takes them. He says:—

'One would think that the pain produced by purgatives would lead all to discover their injuriousness. Pain all allow is an evidence of the existence of disease, and yet, though, where purgatives are taken, they produce the most violent pains, few recognise that the development of this pain proves that the purgatives excite intestinal disease. Let the same amount of pain and of diarrhœa be produced by natural causes, as is produced after the taking of purgatives, and how earnest would be the endeavour on the part of most to remove the effects, which they would be inclined to ascribe from the severity, to inflammation of the bowels.'—p. 476.

It is true some purgatives are not so injurious as others, because they are less irritating; but it is equally true, that since all purgatives are irritants, therefore they are all unnatural and injurious. And in proof of the assertion that purgatives are injurious to those who take them, Dr. Epps gives a catalogue of cases, some of which are taken from the works of allopathic physicians themselves, and some have come under his own notice, where the disease has either been induced or fostered in the patient by the administration of purgative medicine. He mentions cases of epileptic fits, of blindness, and other injuries of the eyes, of consumption, palpitation of the heart, dyspepsia, chronic inflammation of the lining membrane of the bowels, which have all been induced by the injurious properties of purgative medicine. Nay, more, he quotes from the works of writers like Dr. Mason Good, to prove that by the admission of the so-called orthodox doctors themselves, serious injury has resulted from this baneful practice. And then he appeals to his own experience and practice to supply him with cases, which

could be multiplied *ad infinitum*, to show the destructive effects which follow upon the exhibition of purgative medicine. In no case does the effect seem to be more injurious than upon women, and yet it is the invariable rule of the medical practitioner to administer a purgative in every case of confinement or other uterine derangement. But the Doctor is not satisfied with barely asserting the fact, that purgatives are injurious to women at these times and under these circumstances, but he supplies the reader with a reason which commends itself to our common sense, why nothing but injury can be expected from such unscientific practice. Speaking of the exhibition of purgatives in confinements, he remarks that the whole energy of nature is employed on the work of restoring to their normal or usual condition those parts of the machine which have been called into a special condition, and he infers justly, that to disturb nature in this work of restoration must be attended with injury to the person concerned; and, therefore, to administer a purgative, which draws away the power of nature from those particular parts which require to be restored, and concentrates the life power upon the bowels, is both unscientific and injurious, and lays the foundation of many of those diseases which trouble the weaker sex to the end of their lives. What then, it may be asked, is the object of Dr. Epps's work? It is to abolish the use of all purgative medicine in the treatment of disease. And if this can be accomplished with safety to the patient, everybody will agree that a benefit has been conferred upon suffering humanity. Now, the Doctor goes about his work in a most philosophical way. In the first part he explains the method in which digestion is carried on, and furnishes his book with beautifully-finished plates to illustrate to the reader the position in which the different organs of the body stand to each other. He then gives us an analysis of the admirable work of Dr. Beaumont, who is the only man that has been favoured in his practice by an opportunity of discovering the real process of digestion, and the facts in connexion therewith. A young Canadian, Alexis St. Martin, received a severe gunshot wound, from which his constitution entirely recovered. The only trace of the injury was a permanent opening into the cavity of the stomach, through which all its operations could be watched. Dr. Beaumont seized the opportunity presented by this case for making those experiments which are the foundation of all scientific treatment of cases connected with the dietetism of the digestive organs. The 13th chapter of Dr. Epps's work is full of scientific information on the gastric juice and the subject of diet, and may hereafter form a scientific basis for future observations on the subject. He then endeavours to show that, for the preservation of health, it requires that every

part of the intestinal tube must be allowed to perform its work deliberately, and without being disturbed; and that, if ever disturbance of any kind be induced in this intestinal tube, disease, in some form or other, must be the consequence. In short, the whole work is full of practical interest, and is written in such a simple, yet logical style, that even the simplest mind, with proper attention, could be able to understand the important information which it contains. We think it deserves a perusal from everyone who desires either to recover the health which has become impaired, or to guard against those things which eventually undermine the constitution, and prepare the way for every kind of disease.

The one particular malady to which in this work Dr. Epps confines his attention is that of constipation; and the good tidings which he has to make known, is, that homœopathy, by the scientific administration of its medicines in accordance with the law laid down by Hahnemann, is enabled without purgative or aperient to remove this troublesome complaint. He takes a different view of the nature of constipation to that which is generally taken, since he believes it to be merely 'the *symptom* of a diseased state, and not the diseased state itself;' and he argues that, if the diseased state producing the constipation be removed, the constipation will of necessity cease. To show the correctness of this view, and the ability of the homœopathic remedies to remove the malady in question, he appends to his work a number of cases, some of which have been treated for a long time by the best of doctors under the old school without success, and upon having recourse to homœopathy have been cured. Now, we are quite prepared to be told, that it was not homœopathy that effected the cure, but it was the powerful hand of nature. If this be granted, what a powerful argument is placed in our hand against the system of medicine which is lauded in our hospitals and schools; for those who oppose homœopathy upon this ground, tacitly confess, that though *it* was impotent to effect the cure, their system of medicine was most potent in *preventing* the cure, and that it was only when the patient was not cured from the hand of the doctor, that nature was enabled to effect what medicine had so long prevented her accomplishing. So that, even upon this ground, it is wiser to appeal to homœopathy than to have recourse to the violent and destructive remedies of allopathy. But the number of families who have been attended successfully in the most acute and dangerous diseases, by no other than homœopathic practitioners, places the matter beyond a doubt to all unprejudiced minds. Now, as Englishmen, we are professedly lovers of fair play, and will not allow truth to be destroyed by that ignorant

and selfish clamour which endeavoured in former days to stop the mouths of Harvey and Jenner, and to proclaim the circulation of the blood in our veins to be a fable, and the doctrine of vaccination a deceit. Homœopathy has been established for more than half a century. It has survived the bitterest persecution, and in spite of all opposition manfully announces the boon which it has to communicate. Now, if homœopathy be, what it is sometimes called, humbug, why may not the humbug be made known to the world? And if it be what it professes to be, the only safe and rational system for the treatment of disease, why should not the public generally be acquainted with its blessings? The contest has long been going on between homœopathic and allopathic doctors, and why may it not now be brought to a termination? Why not have an opportunity afforded to detect its fallacy or establish its truth? Let a ward in some of our hospitals be thrown open to homœopathic physicians, and let them stand or fall by the result. If they cure their patients in a shorter time and with less suffering than do the allopathic theirs, let homœopathy be freed from further censure. If they fail to cure them, let homœopathy be consigned to the destruction which failure is sure to involve. This is a fair way of settling the difference; and if the allopathic physicians be sincere in their belief that homœopathy is humbug, they have nothing to fear from the trial, and therefore, we should imagine, they would hail the opportunity of raising their profession upon the ruins of what they have so long despised.

Whether this feasible mode of testing the relative merits of old-system physic and the homœopathic system, under conditions in which the two systems can be fairly tested, be or be not granted, no doubt can exist that the facts and the views put forward in Dr. Epps's work must in time attract public attention, and will thus produce a state of mind which will enable the system he advocates to work its way. Though the progress may be slow, yet as such progress will be founded on an enlightened public opinion, the permanence of the progress will be in an exact ratio therewith.

ART. IX.—*The Autobiography of Francis Arago.* Translated from the French by the Rev. Baden Powell, M.A. London: Longman & Co. 1855.

2. *Meteorological Essays.* By François Arago, Member of the Institute. With an Introduction by Baron Alexander Von Humboldt. Translated under the Superintendence of Colonel Sabine, R.A. Treasurer and V.P.R.S. London: Longman & Co. 1855.

WE should, perhaps, be scarcely justified in asserting that self-love penned every autobiography. But if self-love be not necessarily a vicious characteristic of the human mind, there is no reason why we should hesitate to confess our belief in this dogma. A man may be actuated by many motives in resolving to write the history of his life, but whatever be his object, he must first convince himself that there is some difference, greatly to his advantage, between him and other men; or, that some event in his life, and valuable characteristic in his mind, have stamped him with a distinguishing mark, before he will resolve upon the attempt. There are autobiographers of many kinds, but they all belong to one of three classes—the religious, the vicious, or the intellectual.

We can easily understand the motives of a man who, after a career of vice, or insensibility to the claims of a future life, is induced to exhibit in his own person the Divine influence in regenerating character, eradicating the weeds of natural growth, and sowing the seeds of faith and good works. He may have for his object a comparison of the misery and degradation of sin with the happiness and purity of a religious life—he may desire by a display of the Divine mercy and power to give a reason why we should pass life in reconciliation to God and man, rather than in enmity and antagonism—and he may hope to impress our minds most powerfully by recording the conversion of his own depraved and turbulent feelings to a desire for holiness and peace. These are some of the aims of religious autobiography, which is, without doubt, the most praiseworthy class of those memoirs men write of themselves; but we are not prepared to say that in such works there is a perfect abnegation of self-love.

There are other men who write their lives with the deliberate resolve to represent themselves as what they are not. Some defy the proprieties of society by the defence of infamous doctrines they do not believe, while others applaud virtuous motives which have no influence on their own character, and attempt to obtain a reputation for purity of thought and action by exposing the

secret haunts of the vices they practise without remorse. The literature of our country, as well as that of France, offers unfortunately too many illustrations of the baseness which would thus outlive itself. But no man can write an autobiography without leaving the impress of his character on its pages. He may attempt to deceive others, or he may deceive himself; but to say nothing of the almost certain revelation of his ruling sentiments, passions, and feelings, the image of his mind is reflected in the sentences he constructs and the words he employs. As he traces the events of his life, here with regret and there with exultation, he leaves on the page a more enduring impress of his mental organization than is found on the disinterred foot-printed slabs quarried from the shore of some ancient sea.

The greater number of autobiographies, however, are written without reference to morals or religion, and are from beginning to end pæans to self-love. A man who writes an autobiography of this class, knows that he has done something which, in his estimation, was not only worth doing, but deserves the approbation of others; and he demands of posterity a public acknowledgment of his assumed right. We do not altogether blame this feeling, for mock modesty is not a virtue, and every man who has dealt fairly with himself knows what he is worth better than those who sit in judgment on him. He may estimate himself a little above his worth, by taking as his standard a coin of small value, or a little below it, by a desire not to think more highly of himself than he ought; but such men may be trusted to write memoirs of themselves, and describe their own labours. They are like hucksters who exhibit their wares to the best advantage, and ask the highest prices consistent with honesty.

To the last-named class of autobiographies we refer that of Francis Arago. He was a biographer as well as a man of science, and an adept in the detection of other men's characters, but his greatest success was in the portraiture of his own. His life was full of interest and instruction, and we follow his record of it like those who read a romance, while he retraces the path by which he attained the highest social and intellectual rank. He was a man of strong will, clear perception, and untiring industry. For many years he was the dictator of science in France, but the power he possessed he used wisely. His mind was of more than average capacity, and it was essentially philosophic. He was, as Humboldt says, 'ardent in discovery, and circumspect in regard to conclusions.' He was less eminent as a discoverer than many men we could name, if that word is to be confined to him who detects new phenomena by observation and experiment, though in this department of scientific inquiry his labours were not without fruit, for he was the first to observe chromatic polarization,

and the effects of rotation magnetism ; and he was peculiarly distinguished for thoughtful and ingenious applications of known truths to the discovery of the unknown. He was not one of those physicists who follow a peradventure. His experiments were made to test the accuracy of an opinion formed by deduction from pre-established truths, and he had both the ability and skill to comprehend their values, arrange them in their relations, and detect what was necessary to unite them. It is not from his autobiography, however, that we obtain this estimate of his scientific character, for that document is nothing more than a history of the labours and adventures by which he obtained the important office of Secretary to the Institute. In the path he has shown us, we must now follow him.

François Arago was born in the Commune of Estagel, in the Department of the Eastern Pyrenees, on the 26th of February, 1786. His father was a man of some education, and a licentiate of law, but supported with difficulty a numerous family by the cultivation of a small property, consisting of arable land, vineyards, and olive-trees. The education he gave to his children was governed by his means of payment more than by his conviction of the value of learning ; and a statement having been made that the illustrious philosopher could neither read nor write when fourteen years old, he has, to vindicate his parents, informed the world that he was taught those arts at an early age in the primary school of Estagel. But the young Francis caught the war mania, and that was a sad inconvenience to his parents. The observant quietude of his childhood was ruthlessly invaded by the passions of war, and his youth was seduced from the contentment of unadventurous pursuits by the bustle of the camp and the excitement of invading armies. The glitter of arms, the roll of the drum, and the glory of combat and conquest, enchanted his ardent spirit, and he resolved to be a soldier :—

'Estagel,' he says, 'was a halting-place for a portion of the troops, who, coming from the interior, either went to Perpignan, or repaired direct to the army of the Pyrenees. My parents' house was therefore constantly full of officers and soldiers. This, joined to the lively excitement which the Spanish invasion had given rise to, inspired me with such decided military tastes, that my family were obliged to have me narrowly watched to prevent my joining by stealth the soldiers who left Estagel. It often happened that they caught me at a league distant from the village already on my way with the troops.'

This childish passion for war, hatred of all nationalities called by his countrymen enemies, this desire for military glory, strong even to death, supported by a constitutional courage and love of daring actions, neither entreaty nor coercion could subdue. It was highly improbable that such predilections should have been

the immediate cause of a successful and beneficial scientific career, but they conferred upon him, in spite of his opposition, the highest and least perishable honours of intellectual effort. He desired power, and he gained it—he resolved to be a dictator, and he was—he esteemed all nations to be the enemies of France who gained honours she might have possessed—but he became, against his will, the Napoleon of French science instead of French politics.

The appointment of M. Arago, the father, to the office of Treasurer of the Mint, led to the removal of his family from Estagel to Perpignan, where young Francis was brought under the influence of a more systematic mental training in the municipal college of the town. His studies were there directed to literature, and to such pursuits he showed no dislike; but he was still resolved to be a soldier. An accidental interview with M. Cressac, a young officer from the Polytechnic School directing the execution of some repairs on the rampart of the town of Perpignan, informed him of the means by which he could obtain his object. An admission into the Polytechnic School would secure a commission in the army, but a qualification was necessary before he could become a candidate for admission. These were the thoughts which inaugurated the second epoch of his life; he had been taught how he was to attain the end he so ardently desired, and he resolved to be a mathematician—that hour he began to study. His first instructor was Abbé Verdier, 'an ancient ecclesiastic, and very respectable man;' but his knowledge of mathematics went no farther than the elementary course of La Caille, and that was far below the mark at which Francis Arago aimed. So when the old abbé had guided him so far as he knew the path, for the want of another living voice he plodded his way through the road-books of Legendre, Lacroix, and Garnier. His experience is so valuable (as we can vouch) to all those who have to devote themselves at an early period of life to recondite studies without the assistance of a competent teacher, that we recommend to all such the consideration of the following passage, in which will be found a sovereign prescription for every perplexity, as it is certainly true that the difficulties which no tension of thought can break, are in time mysteriously solved without effort by the absorbent power of the mind:—

'In going through these works, I often met with difficulties which exhausted my powers; happily, though a strange thing, and perhaps without example in all the rest of France, there was a proprietor in Estagel, M. Raynal, who made the study of the higher mathematics his recreation. It was in his kitchen, while giving orders to numerous domestics for the labours of the next day, that M. Raynal read with advantage the 'Hydraulic Architecture of Prony,' the 'Mécanique

Analytic,' and the 'Mécanique Céleste.' This excellent man often gave me useful advice, but I must say that I found my real master in the cover of Garnier's Treatise on Algebra. The cover consisted of a printed leaf, on the outside of which blue paper was pasted. The reading of the page not covered made me desirous of knowing what the blue paper hid from me. I took off this paper carefully, having first damped it, and was able to read underneath it the advice given by D'Alembert to a young man who communicated to him the difficulties he met with in his studies: "Go on, sir, go on, and conviction will come to you." This gave me a gleam of light: instead of persisting in attempts to comprehend at first sight the propositions before me, I admitted their truth provisionally; I passed on beyond, and was surprised on the morrow to comprehend perfectly what over night appeared to me to be encompassed with a thick cloud.'

This passage in the life of Arago reminds us of a confession made by Lagrange, who was, like him, a self-taught mathematician. 'I did not perplex myself with difficulties,' he said, 'but returned to them twenty times in succession, if necessary. If after all these efforts I could not make them out, I examined how another mathematician treated the same point.'

When sixteen years old, Francis Arago left home for Montpellier, to offer himself for preliminary examination, previous to admittance into the Polytechnic School. M. Monge, the examiner, was prevented by illness from attendance, and the candidates were summoned to Paris. This journey Arago was unable to take, and he returned home disappointed, but not discouraged. His family now renewed their efforts to turn him from his purpose, but he was strong in his determination, and his taste for mathematical studies finally predominated over his desire to yield to the wishes of his friends. 'I increased my library,' he says, 'with Euler's 'Introduction à l'Analyse Infinitésimal,' with the 'Resolution des Equations Numériques,' with Lagrange's 'Theories des Fonctions Analytique,' and 'Mécanique Analytique,' and finally, Laplace's 'Mécanique Céleste.' I gave myself up with great ardour to the study of these books.' That such books should have been selected for study by a self-taught youth of sixteen is strange; but that they should have been read and mastered is an evidence of that vigorous thought and indomitable perseverance which, through a long life, distinguished Francis Arago. But the time for examination came at last, and he arrived at Toulon, in company with another candidate, who had been educated at the public college, to appear before M. Monge, a man whose inflexibility of purpose, in spite of his benevolence, terrified the candidates more than the profundity of his mathematics. The interview between this eminent geometer and the youth who was destined to be his successor in the chair of

Analysis applied to Geometry, is characteristic of both the indifference of M. Monge to everything but the capacity and acquirements of the candidate, and the bold impetuosity of Arago, under a just apprehension of the native power of his mind and the range and depth of his mathematical knowledge.

'It was the first time that pupils from Perpignan had appeared in the contest. My intimidated comrade was completely discomfitted. When I repaired after him to the table, the strangest conversation took place between M. Monge and me.

'"If you are going to answer like your comrade, it is useless for me to examine you."

'"Sir, my comrade knows more than he has shown, I hope to be more fortunate than him; but what you have just said to me might well intimidate me, and deprive me of all my powers."

'"Timidity is always the excuse of the ignorant; it is to save you from the shame of a defeat that I make you the proposal of not examining you."

'"I know of no greater shame than that which you now inflict upon me. Will you be so good as to question me? It is your duty."

'"You carry yourself very high, sir. We shall see presently whether this be a legitimate pride."

'"Proceed, sir; I wait for you."'

The examination which followed commenced with some simple questions in geometry and analysis; but the professor gradually increased the difficulty of the task, for he had determined to test thoroughly the self-assumed strength of the young bravo. Whatever impressions unfavourable to the candidate may have been excited by the failure of his comrade, and his own disrespectful and somewhat insolent tone, faded from the mind of the examiner when he discovered the power of the young geometrician, for he foresaw the greatness of the maturity from the vigour of the youth. As much delighted as surprised by the soundness of the foundation that had been laid, the professor continued the examination for his own pleasure when the requirements of the law had been satisfied, and the formal but necessary examination was finished. After an examination which lasted two hours and a half, Francis Arago retired, with the promise that he should stand first upon the list of accepted candidates.

At the end of the year 1803, Arago entered the Polytechnic School, and from this time his life was so intimately connected with the history of pure and physical science in France, and with the many great minds which gave it so much honour, that we are constantly withdrawn from him to watch the progress of some man of genius with whom he was more or less associated. The names of many of the professors of the Polytechnic School are among the most honoured in France; and it has not unfrequently

happened that these men have received their education in the school where they afterwards taught. This was the case with Malus, the discoverer of the polarization of light. This eminent man, distinguished in early life by his literary attainments, was admitted into L'Ecole du Génie, a school for royal engineers; but becoming to the Minister Bouchotte a suspected person, and losing all hope of advancement, he joined the 15th Battalion of Paris, and was engaged as a private soldier in the repair of the harbour of Dunkirk. His superior officer detected his merit, and obtained his admission into the Polytechnic School, where his high mathematical attainments were so appreciated, that he was selected as the most proper person to deliver a course of lectures on analytical science during the absence of M. Monge. After following Napoleon through the Egyptian campaign, and enduring all the fatigues of the subsequent wars, he returned to Paris with a broken constitution but still vigorous mind, and has left an imperishable name on the roll of science. It is by men of this stamp that the Polytechnic School has been made so honourable in France; and such were the friends and companions of Arago.

Soon after entering the school, Arago passed another examination previous to his removal from one division to another. On this occasion, the celebrated Legendre was the examiner, and the account of what then occurred so much resembles what had passed when M. Monge was the investigator, that one is tempted to inquire whether the study of mathematics in France had a tendency in that age to make a man rude, boorish, and insulting, or whether there was not something in M. Arago's manners which deserved reproof. The unfavourable picture of the great geometer, drawn in the autobiography, is, we believe, to be attributed to M. Arago's assumption and self-confidence. Legendre was not a man to win esteem by gentleness of manner, but he gained it by uprightness of purpose. When requested, on one occasion, by the Minister of the Interior, to give his vote in the Institute to a court favourite, his answer was—'I shall vote according to my conscience.' He was then an old man, honourable for his science, venerable in age, but his inflexible integrity brought the loss of his pension. This was the man before whom the stripling Hercules of analytical science came for a second examination. As he entered the study of the professor he met two servants carrying out a young man who had fainted during his examination. Nothing daunted, Arago advanced, and so far from attempting to propitiate the favour of this dreaded examiner, he rudely, if not insolently, stopped an irrelevant conversation, and made an effort to create an unfavourable opinion in his mind. But in what followed we detect the integrity as well as the severity of

Legendre. Having asked a question which required the use of double integrals, Arago selected a process of solution of which the examiner was the discoverer, and not that taught in the class from which he came. Legendre thought that the selection of this process of solution had been made to bribe his judgment, and instantly declared his intention to give him a bad mark in character, unless he could give a good reason for selecting it in preference to that employed by his teacher. The reason was satisfactory, and the examination was closed by Legendre, with a remark as honourable to himself as to his self-satisfied pupil,—'I perceive that you have well employed your time; go on the same way the second year, and we shall part very good friends.' They did not part, but a mutual feeling of respect and an honourable acknowledgment of talents were never lost.

The mathematical acquirements of Arago were, as we have seen, detected and acknowledged by two examiners, eminent among the learned for their genius, both of whom he uselessly irritated for no other reason than his confidence in his ability to allay the anger or disgust he had excited. His object seems to have been the exhibition of his skill, by a more searching investigation of his acquirements than was demanded in the ordinary routine of an examination. If any such motive influenced him, he gained all he sought, for the reputation acquired by these trials secured him not only an acknowledged superiority among his comrades and the confidence of his teachers, but a reputation in the most eminent scientific societies of France, as a man of promise who would rapidly rise to eminence. At the commencement of his second year in the Polytechnic School, he had made acquaintance with Hachette and Poisson, and within eighteen months from the date of his admission he was elected to the high office of secretary to the Observatory, an appointment he was unwilling to accept without a condition that he should be at liberty to re-enter the artillery service if he pleased, so predominant was his desire for a military career even at this period of his life. His name was therefore left on the books of the school, and he was simply detached to the Observatory on special service. This led to an awkward incident a few years later when engaged in a trigonometrical survey in Spain, for he was suddenly recalled to pass the necessary examinations on quitting the school, as his name could not remain on the books more than four years. It happened, however, that he had in the interval been elected assistant astronomer, and this was regarded as a satisfaction of the law, and he was allowed to complete his work. But the inconvenience of his anomalous position did not end here; for, after his election as a member of the Institute, he was ordered by the director of the conscription to join the contingent

of the twelfth arrondissement of Paris, or find a substitute; and thought himself fortunate in escaping that which he had once so ardently desired, by threatening to appear in his official rank in the Place de l'Estrapade, where the conscripts were to assemble, and march with them through Paris in the uniform of the Institute.

A Frenchman may, if he please, complain that the laws of his country give a possibility of such an interference with the highest scientific talent, and say, with much reason, that when science is brought within the grasp of a military despotism, its votaries should be protected; and that a man who takes a high position, especially when in the public service, should have no compulsory obligations under the War Office. But while he objects to such an absorption of all the powers of intellect by one department of the state, he cannot but feel proud that in France the way to competence and distinction is open to all men, and success can be attained by those who earnestly strive for it. But we have certainly no authority to complain of any of the anomalies which may pertain to the position of the French savan, for in England an Arago or a Laplace might have lived in indigence, wanting not only the comforts but the necessaries of life.

From the time he entered the Observatory the life of Arago becomes intensely interesting, for the events of it are associated with the progress of science during a period remarkable for great discoveries. When still a youth, and supposed to be under the discipline of a school, he was suddenly removed into the society of men who had earned by their labours and discoveries the highest renown, and by all he was treated with a respect and even deference not due and scarcely appropriate to his age. Poisson, who had selected him for the office he filled, gave him his friendship; Laplace, the most honoured among the honourable for the loftiness of his genius, the most despised among the despicable for the littleness of his character, a man who could perfect Newton's discoveries, and demonstrate the origin of all the irregularities in the motions of the planetary system, but was too stingy and suspicious to trust his wife with the key of the sugar-caddy, loaded him with civilities; while Biot received him as a friend and fellow-labourer, and engaged his assistance in the continuation of Borda's researches upon the refracting power of the gases. This happy association of Biot and Arago led to frequent conversations upon the great scientific projects of the day, and the men connected with their completion; but they were especially interested in the measurement of an arc of the meridian, commenced by Méchain, and now suspended by his death. This too had been the indirect cause of the introduction of Arago into the Observatory, and that event was the main-

spring of his future activity. His biography, therefore, is closely connected with a project which had its origin in the Institute when he was a child.

Towards the close of the eighteenth century, the French government, directed by its men of science, determined on the measurement of an arc of the meridian between the parallels of Dunkirk and Barcelona. The southern portion of the survey, that between Rhodes and Montjouy, was intrusted to M. Méchain. In June, 1792, he left Paris to commence this work, accompanied by M. Tranchot, his assistant, and two Spanish commissioners. In about eight months he had triangulated the country between Barcelona and the Pyrenees, taken the latitude of Montjouy, satisfied himself of the possibility of continuing the arc to the Balearic Isles, and made many astronomical observations. But before he could connect the chain of triangles measured in Spain with a station in France, he heard of the outbreak of the revolution, the execution of the king, and the declaration of war against England, Holland, and Spain. In addition to these impediments to the successful completion of a great scientific labour, he became personally incapable of exertion, in consequence of an accident, and when partially recovered from the effects of the injury he had received, and would have resumed his labours, he was prevented by the Spanish government, his passport being at the same time refused, with liberty to choose his place of residence. He selected Barcelona, that he might determine the latitude of the place, and connect it geodesically with his station at Montjouy. The most accurate results were anticipated from M. Méchain, a careful observer, with ample leisure, and provided with excellent instruments. The difference of latitude, however, between Montjouy and Barcelona was, according to his measurement, 3·25 greater than the known distance between the two places. Many reasons were given for this error, but the critics themselves were not in possession of the information necessary for a correct opinion. Some attributed the difference of result to the imperfect construction of the instruments, and some to the inaccuracy of the observer, while others traced it to the gravitating force of Montjouy. But M. Méchain himself discovered an error he had not the courage to reveal, and timidly resolved to wait an opportunity to verify his observations. This fatal secret destroyed his happiness, weakened the springs of his activity, produced a restless, irritable, and diseased temperament of mind, and at last, aided by the natural effects of captivity and fatigue, killed him.

That such a work should be left unfinished, and in a state of so much doubt and error, appeared to the associated physicists, Biot and Arago, a reproach to France and her men of science,

and they became ambitious of the honour of completing the work, and removing the supposed disgrace. Laplace, having approved their plans, interested himself in obtaining their appointment to the service, and procuring from the government the necessary funds. Both these objects were attained, and MM. Biot and Arago left Paris early in 1806 to commence their labours.

The appointment of M. Arago to this service is one of those strange events in human life out of the range of the anticipations of all the individuals principally concerned—a link necessary for the completion of a chain of existence, perfectly adapted to its place when introduced, but which no man could have recognised as belonging to it. M. Méchain had become acquainted with Arago's father in 1794, during his survey in the Pyrenees. In 1803, the Academician again visited Perpignan, and Francis Arago was then preparing to take his examination previous to his entering the Polytechnic School, and his father anxiously sought the advice of a friend whose scientific attainments and public engagements gave authority to his opinions. M. Méchain had but little hope of the admission into the national scientific school of a youth who had received so little assistance in his studies; but recommended that, in the event of his being accepted, he should confine his hopes to a commission in the artillery or engineers, and aim at no higher service. It is most remarkable, that in two years and a half from the time of this conversation, Francis Arago occupied the office of secretary to the Observatory, vacated by M. Méchain's son, and in four years was finishing the work of the Academician himself.

A more unfortunate period for the commencement of an important scientific survey in a foreign country could not have been selected, than that in which Biot and Arago began their labours. All Europe was agitated by rumours of war, and those nations not then involved in strife were expecting and preparing for its approach. Under such circumstances, a geodesic survey, requiring stations and a system of signals upon mountain summits, was an imprudent enterprise. To Arago, the danger of the service was probably one of its charms, for it satisfied his love of adventure as well as his ardour for science, and his courage and perseverance were as much demanded as his intelligence. For two years he was thus occupied in Spain. In the establishment of stations and signals he traversed at all hours, but chiefly by night, the mountain ranges separating Valencia and Catalonia from Aragon; and the ennui of which he complains in the intervals between his journey was only relieved by the occasional friendly visit of a chief of banditti or the more dangerous familiarity of two Carthusian monks.

Formentara was the southern extremity of the arc to be mea-

sured, and when the latitude had been taken, M. Biot returned to France, leaving Arago to make the geodesical junction of the Island of Majorca to Ivica and Formentara, so as to obtain by a single triangle the measure of an arc of parallel of one degree and a half. The most adventurous part of the service was now to come. While he was in Majorca measuring the latitude and azimuth, the French army entered Spain, and the young astronomer became at once the object of popular suspicion, a report spreading that he was occupied every night at his station on the Clop de Galazo, a high summit over the port, in making signals to the French generals. So violently were the people excited against him, that he was compelled to seek protection from the rage of the mob in the Spanish Castle of Belver; but even there safety was not secured, for an attempt was made by a monk to persuade the soldiers who brought food from the town for him and his companion, M. Bertherie, to murder him by poison. This happened in July, 1808, and a month passed before he was able to make his escape to Algiers. Here he obtained a passage for his companion and himself in an Algerian vessel, but she was boarded by a Spanish corsair from Palamos when entering the Gulf of Lyons, and was carried as a prize to Rosas. The authorities at that place detained the vessel, and imprisoned the crew and passengers; but the ship belonged to the Dey of Algiers, and in November she was given up, and an attempt was made to reach Marseilles. The white buildings of the town were in sight, and all the passengers were rejoicing in the hope of a speedy termination of the voyage, when a gust of the mistral drove the vessel southward, and on the 5th of December, M. Arago and his companion landed at Bougie. Finding that no sailor would at that time of the year venture by sea to Algiers, a bargain was made with a Mohammedan priest to conduct the party overland, a route which had far more real dangers than the Algerine sailors fancied at sea.

From the end of December, 1808, till June, 1809, Arago was detained in Algiers, and at last barely escaped capture by an English frigate when entering Marseilles. His perilous service, however, was now terminated. He was received by his family with the joy of him who said, 'This my son was dead and is alive again; he was lost and is found'—or of him who, having refused to be comforted, saying, 'I will go down into the grave unto my son mourning,' found occasion afterwards for the exclamation, 'Now let me die, since I have seen thy face, because thou art yet alive.' A watch he had sold to purchase food had fallen into the hands of his family, and was regarded as a certain proof of his death. His scientific friends, too, hastened to give him proofs of the interest they took in him and in his labours. 'The first letter

I received from Paris,' he says, 'contained testimonials of sympathy and congratulation on the termination of my laborious and perilous adventure; it was from a man already in possession of an European reputation, but whom I had never seen: M. de Humboldt, after what he had heard of my misfortunes, offered me his friendship. Such was the origin of a connexion which dates from nearly forty years back, without a single cloud having troubled it.' The indissoluble bond science throws around the men who cultivate it, is not the least among its many advantages. It is irrespective of nationalities and the prejudices of partisanship. Humboldt was not deterred by the recollection of Jena from securing the friendship of Arago; Davy was welcomed in Paris by its most eminent men of science, when the name of England was associated in the mind of the French public with all that is detestable in the annals of selfishness and crime; and now that England and France have joined hands as allies, and stand in combat against the hordes of Russia, we cannot forget that there are such men in St. Petersburgh as Peters and Struve. That is a noble intelligence which can thus unite in respect, sympathy, and affection men of all races, and admits as one test of brotherhood a desire to discover physical truths, and a devotion to the study of nature.

In September, 1809, and only a few days after his return to Paris, Arago was elected, by forty-seven votes out of fifty-two, a member of the French Institute. The proposal of conferring upon him this honour was for a time opposed by Laplace, because he felt, and not without reason, that his election would be a discouragement to Poisson, who was not less worthy of the honour, and had, as he thought, the first claim. Finding, however, that the members had resolved to support his nomination, he withdrew his objection, and gave him his vote. Arago was at this time only twenty-three years of age, but at once took a lead in the Academy, and before the year closed was elected by the Conseil du Perfectionnement of the Polytechnic School to the chair of Analysis applied to Geometry, vacated by M. Monge. After the death of Delambre, the author of the well-known 'History of Astronomy,' which happened in August, 1822, a desire was expressed to elect Arago to the office of perpetual secretary to the Institute, but he strenuously opposed the nomination, and supported the election of M. Fourrier. This eminent man, who 'fulfilled the duties of secretary with much distinction, but not without some feebleness, some negligence on account of his bad health, died on the 16th of March, 1830,' and in the following June, Arago was elected, and held the appointment till his death.

Among the duties of the secretary of the Institute is that of writing the memoirs of deceased members, and thus transmitting

to posterity the most interesting and valuable history of the scientific progress of the age. It is not now our business to review the *éloges* written by Arago in the execution of his duty; but without that minute examination which they will so richly repay we may characterize them as admirable critiques upon scientific talent, blended with clear descriptions of important discoveries, and honest estimates of the mental characteristics and scientific claims of individuals. If his judgment was sometimes perverted by a passionate nationality, he always gave evidence of a strong conviction founded upon careful research; and if in some instances his decisions were so swayed by the bias of his mind and his preconceived opinions, as to give expression to observations of unnecessary severity, he was, notwithstanding, governed by an intense regard for the interests of science, and an earnest endeavour to encourage research by a liberal reward of honour to those who successfully employed themselves in experimental investigations.

While following the autobiography, we have perhaps given too much importance to the events of the early life of Arago, though to unscientific readers, and those who are pleased to trace the development of genius, this portion of his history may not be the least interesting; and by other readers it may be less regretted, as the only volume before us of the intended English translation of his works is that containing the Meteorological Essays, which, however interesting and valuable, do not admit of more than a brief notice, without entering upon a minute investigation of historical documents, and the deductions drawn from them. This volume contains five Essays, the subjects of which are: Thunder and Lightning—Electro-Magnetism—Animal Electricity—Terrestrial Magnetism—and the Aurora Borealis. They differ essentially in design, but they are all acceptable contributions to the popular scientific literature of the age.

The Essay on Thunder and Lightning is a masterly exposition of the state of our knowledge in regard to these imposing phenomena. It is written in a style calculated to entice the reader to follow the investigations, and illustrates, by a pleasing example, the process of philosophical inquiry. Whether regarded as a *résumé* of the scattered evidence of past ages, or as a careful examination of the dogmas of science and the prejudices of the public, its value consists in the detection of the doubtful relationship of assumed facts, and in a clear statement of the observations still required to so connect the discoveries already made as to establish or disprove adopted theories. The Essay contains abundant evidence of the author's power of minute investigation, vivid perception, and cautious generalization.

Arago's object in writing the paper on Electro-Magnetism was

evidently to claim for France generally, and for himself in particular, a large share of important discoveries in this new but now highly advanced branch of physical science. His first Essay on the subject, he informs us, was written in 1816 ; and was a protest against a charge made by the editors of the 'Bibliothèque Universelle de Genève,' in some prefatory remarks to a description of Mr. Children's battery and experiments against the French philosophers, who, the writer said, had received from the government of their country large sums of money for the purchase of instruments, and had done nothing. Arago, in whom nationality was an irresistible instinct, was indignant. But no one can now repeat the charge of which he then complained ; for whatever occasion there may have been for the reproach when it was written, the honour of France has been fully redeemed by the labours of Ampère, Biot, Becquerel, and other men of equal energy in research, if of less reputation.

The first discovery to which Arago lays claim as belonging of right to himself, is that of the induction of magnetism in soft iron by the conducting wire of a voltaic pile. This, however, was so obvious a deduction from Oersted's discovery of the deflection of magnetic needles by the voltaic current, that it could scarcely have escaped the mind of any man when repeating the experiments of the Danish philosopher. Arago's principal experiment in electric science was, therefore, that of 'rotation magnetism ;' and the anxiety with which he defends his right of priority, is a sufficient proof of the value he attached to the discovery, though, for the explanation of the origin of the phenomena, we are indebted to Faraday.

If we strip Arago's observations and experiments of all the extraneous importance they derive from his high reputation, and discard the practice, but too common among a certain class of philosophers, of mystification, they may be described in a few intelligible words. While engaged with Humboldt and Biot on Greenwich-hill, in making some experiments on the magnetic intensity, he observed that when the needle was put into vibration in proximity to other substances, even those which are non-metallic, it came to rest quicker than when vibrating at a distance from them. Subsequent experiments proved this observation to be correct ; and further research demonstrated that a magnet in rotation gave motion to a plate of copper so suspended under as to be free to obey the impulse.

The publication of these results immediately attracted the attention of scientific men, not so much because it was perceived that they had a direct application to the improvement of the mariner's compass, but because they suggested the hope of discovering some new magnetic conditions, and promised a better

acquaintance with the occult principle of terrestrial magnetism. The subject was experimentally examined by Babbage and Herschel, who verified the results announced by Arago so far as related to the metals, but could detect no force between the needle and other substances. The production of the phenomena they attributed to magnetic induction, each pole of the magnet inducing in that part of the plate nearest to it a polarity opposite to its own. The force thus excited was, therefore, according to their hypothesis, attraction. This explanation was rejected by Arago, and Ampère asserted that the force was repulsive. The action so unexpectedly discovered to exist between magnets and non-metallic bodies, of which Barlow and Herschel could obtain no evidence, because, according to Arago, they were placed at too great a distance from the needle, seemed to prove that magnetism was not the cause of the phenomena. Coloumb boldly asserted that 'all bodies, organic and inorganic, are under the influence of the organic force;' and Biot was of opinion that 'either all substances in nature are susceptible of magnetism, or they all contain portions of iron or some other magnetic metal which communicates to them this property.'

Such were the differences of opinion when Faraday commenced his investigations, and succeeded in reconciling all minds by the announcement of the presence of magnetic electricity. Having already obtained electricity by the action of magnets, he examined Arago's experiments with deep interest, impressed with the belief that he should find in the facts the proof of the existence of another source of electricity, and a means of constructing a new electrical machine. With the large compound magnet of the Royal Institution he commenced his experiments, mounting a disc of copper, about twelve inches in diameter and a fifth of an inch in thickness, upon a brass axis in such a manner as to admit of either horizontal or vertical revolution. Upon connecting his apparatus with a galvanometer, he found that as long as the disc was at rest the needle, was unaffected, but the moment it was put in motion, the galvanometer gave evidence of the presence of an electric current. But we may give the result in Faraday's words:—

'It is now evident that the rotating plate is merely another form of the simple experiment of passing a piece of metal between the magnetic poles in a rectilinear direction, and that in such cases currents of electricity are produced at right angles to the direction of the motion and crossing it at the place of the magnetic pole or poles.

'Now that the existence of these currents is known, Arago's phenomena may be accounted for without considering them as due to the formation, in the copper, of a pole of the opposite kind to that approximated, surrounded by a different polarity of the same kind; neither is it essential that the plate should acquire and lose its state in

a finite time; nor, on the other hand, does it seem necessary that any repulsive force should be admitted as the cause of the rotation.'

Of the other Essays, that upon 'Terrestrial Magnetism' is the only one on which we can make any remarks. The subject is one of great difficulty, requiring long-continued careful observations, and the combined researches of many observers. The discoveries which have so clearly demonstrated an intimate relationship between heat, electricity, and magnetism, have done little or nothing towards proving the origin of the variations in magnetic declination, inclination, and intensity. From this remark it must not be imagined that in a subject vitally affecting the interests of mankind in a higher degree, perhaps, than any other physical science, that the physicist has abandoned the subject as one of hopeless pursuit, or that he is inactively waiting for an accidental solution of the difficulties. We recommend Arago's Essay to careful perusal as an evidence of the patient observation with which the subject is studied; and the reader will at the same time learn the extent of our ignorance and the process by which knowledge is sought. Arago's observations extend over a period of forty-two years, commencing in 1810. The record of his observations on the daily variation consists of six large folio volumes, containing together 2076 pages, and 52,599 observations. During this long period he made on an average eleven observations every day, beginning at seven in the morning and ending at eleven at night. But 'sometimes we find him observing from hour to hour until half an hour after midnight, and then rising so as to begin the same work again at four the next morning. Under some circumstances, we find the observations succeed each other every five or even every three minutes.' The result of his persevering labours is soon told, and will be thought an inadequate reward by those who have a habit of sneering at scientific enthusiasm. He ascertained that in Paris the daily motions of the needle are generally regular, two complete oscillations being made every day.

'Beginning from 11 h., P.M. the north end of the needle moves from west to east, reaches a *minimum* declination at $8\frac{1}{4}$ h. A.M., and then retrogrades towards the west to attain its *maximum* declination at $1\frac{1}{4}$ h. P.M.

'From $1\frac{1}{4}$ h. P.M. the needle moves again towards the east, reaches a second *maximum* between 8 h. and 8 h. P.M., and returns again towards the west to attain its second *maximum* at 11 h. P.M.

'The greatest amplitude is that of the semi-oscillation, which takes place between 8 h. A.M. and 1 h. P.M.

With much confidence we commend this volume to our readers, for it is popular as well as scientific, and not only teaches what has been discovered, but points out what is yet required, and how that is to be attained.

Brief Notices.

CONTENTS.

The Song of Hiawatha. By Henry Wadsworth Longfellow. Fcap. 8vo. pp. 316. 5s. London: Bogue. 1855.

In proportion to the eminence of the reputation which Mr. Longfellow has to sustain or to lose as a poet should be the care with which that reputation is guarded. This law, we fear, the author has disobeyed in the publication of the production now before us. It appears to us altogether unworthy of his genius and his fame, if indeed we ought not rather to designate it as a liberty taken with the public. The poem is founded on a tradition prevalent among the North American Indians, of a personage of miraculous birth, who was sent among them by the Great Spirit to clear their rivers, forests, and fishing grounds, and to teach them the arts of peace. The advent and mission of this Hiawatha forms the main subject of nearly six thousand lines, without rhyme or variety of metre. How wearisome they become, the reader may imagine, from one short specimen. The speaker is a worthy rejoicing in the name of Pau-Puk-Keewis, who, standing on the edge of a dam, thus addresses a beaver, who opportunely made his appearance:—

'Oh, my friend, Ahmeek, the beaver,
Cool and pleasant is the water;
Let me dive into the water,
Let me rest there in your lodges;
Change me too into a beaver!'
Cautiously replied the beaver,
With reserve, he thus made answer,
'Let me first consult the others,
Let me ask the other beavers.'

Let the reader multiply the effect produced on his mind by these lines by five or six hundred, and he will have a tolerably accurate notion of the general character of the poem. Many of its incidents are the intercourses and loves of the personified elements—the Summer, the East Wind, &c., but we look in vain for the grace of Milton's

'Zephyr with Aurora playing,
As he met her once a maying.'

They are always tame, and sometimes absolutely childish. An

instance of the method in which scenes intended to be sublime are dealt with, is furnished at the opening of the poem, when the 'Great Spirit, the Master of Life,' is represented as appearing from heaven, and summoning the warrior-tribes to listen to his counsel, and to the promise of the coming Hiawatha. His first august act was to manufacture a tobacco-pipe, and, erect on a lofty mountain, to smoke it out before the eyes of his creatures. He next taught them to cultivate the same questionable habit, in token of peace; and finally, rises to heaven, elate upon a cloud of tobacco smoke! The reader will think we are in jest. On the contrary, we are representing the truth without the slightest exaggeration. The same is thus described in the closing lines of the first canto:—

> While the Master of Life ascending
> Through the opening of cloud-curtains,
> Through the door-ways of the heaven,
> Vanished from before their faces,
> In the smoke that rolled around him,
> The Pukwana of the Peace-Pipe!

The work is studded throughout with the most uncouth and ineffable Indian words—riotous groups of vowels and consonants—introduced without the slightest necessity, and frequently as if explanatory of the English word they represent; thus—'And the heron, the shuh-shuh-gah.' This particular form of bad taste defaces every page. On the whole, despite the name of Longfellow, to whom we own great obligations, we must designate this as a very feeble and faulty—we had almost said a trumpery performance. It cannot be compared to a palace, a temple, or a bower; but only to a wigwam. It derives no interest from invention, no solidity from thought, and no charm from poetic fancy.

A very neat shilling edition is issued to meet the competition of the British market.

Gilbert Massenger. By Holme Lee. 8vo. London: Smith, Elder, & Co. 1855.

We have before borne our testimony to the merits of this author, in reviewing 'Thorney Hall;' and after perusing this volume we are disposed to repeat the expressions of our interest and admiration. It is the history of a life, from a boyhood nurtured under a maiden aunt, whose gloomy views of religion were deepened by a matrimonial disappointment; thence through the discipline of an endowed country school; and lastly, through a life of many and bitter sorrows. The harshness of his aunt drove him from his home at an early age; and having acquired some taste for mechanics and drawing, he entered into the service of a civil engineer, in which, by talent and resolution, he attained a position which the inheritance of his aunt's property at her death rendered less necessary to him. But in his school-days he had contracted a fond acquaintance with the niece of his preceptor, and as she blossomed into womanhood the intimacy was renewed at the town

house of that gentleman's brother, who was the disappointed suitor of Gilbert's maiden aunt. Such a love as was to be expected from two such natures sprang up between them. Amidst the increasing age of the one, and the growing prosperity of the other, this attachment ripens to the maturity of an engagement, and the intense love of both is depicted with a warmth of colouring which unquestionably distinguishes the pencil of Holme Lee. On the death of the aunt, Gilbert discovers from her papers that she had declined marriage with his friend, William Graham, from a conscientious repugnance to transmit a hereditary malady, with the existence of which, in his father and other members of the family, she had already acquainted him. After an agonizing conflict, he takes the same resolution, breaks off his engagement, and wanders to the wilds of Western America, in search of forgetfulness. During the delightful period of his intimacy with his Helen, the scepticism of indifference gave place to those religious convictions and hopes which supported him through the trials of his chequered life. On his return to England, after an absence of fifteen years, he finds the object of his affections a matron and a mother, the wife of an early friend and rival,—exchanges his passionate love for a pensive friendship, and spends his manhood and his age in that calm contentment which springs from the sense of righteous self-conquest and the pleasures and prospects of true religion. The tone of this short but beautiful narrative is most healthful. The descriptive powers of the author, marked by occasional touches of singular pathos, vindicate for him a high place among contemporaneous writers of fiction; while his choice of the more sombre scenes of Nature harmonizes with the character of the narrative, and answers at least one of the ends which the ancient philosopher attributed to tragedy,—that of purifying the heart, if not by terror at least by pity.

Controversial Correspondence between the Rev. Paul Maclachlan, Roman-catholic Priest in Falkirk, and R. W. Kennard, Esq. 8vo. London: Partridge & Oakey. 1855.

This volume, extending to upwards of seven hundred pages, is filled with letters between a lay gentleman, well known in the highest commercial classes of this metropolis, and a Roman priest residing near the extensive works of the former in Scotland. It appears to have originated almost in accident. A lecturer having described the wretched condition of the roads in Spain, the priest rushes into print in their defence. Mr. Kennard having recently sacrificed a carriage and twelve oxen in conveying an engine along the said roads, published his experience in a Scottish paper. The ill-advised priest attacks him, and thus originates the controversy before us. On the part of Mr. Kennard, it is conducted with great temper and urbanity, which give a keener edge to his arch and amusing satire. The Papist, on the contrary, waxes 'fast and furious,' and losing his guard, lays himself at the mercy of his opponent. The historical grounds on which the Romish clergy teach their disciples to rely are ploughed up by the lay controversialist in the most unceremonious manner. The unblush-

ing effrontery and fraudulence of the Church are exposed with equal fearlessness and felicity. But just when the issue was about to be joined on the doctrines of the Roman-catholic Church, the priest absconded from the field. Before he knew the formidable character of his opponent, he complimented him on his 'high courtesy,' 'eloquent language,' 'lively wit,' and 'clear, logical, and intelligent mind;' but at a subsequent stage of the controversy, and at the threshold of the contest on the great questions of theological doctrine, he finds it convenient to declare that he can gain no credit from a conflict with such a foe, against whom he fires in his retreat the most rude and inconsistent vituperation. Every impartial reader must admit this to be the confession of defeat, in all but the ingenuousness and honour which the simple admission would have indicated. It is being drummed out of the lists instead of retiring from them with the honours of war. Mr. Kennard has done good service to a good cause; and if his success has not been more complete, it is because he has not had a more worthy and able opponent.

Olga; or, Russia in the Tenth Century. An Historical Poem. London: Hamilton. 1855.

HAD this been a brief prose narrative instead of an epic, we should have called it well-timed, and praised the author's exhortations to the love of our enemies, whatever estimate we might form of the completeness of his acquaintance with European politics. As a poem, we cannot say much in its favour. It is written in blank verse, so bald as to be merely prose cut into lengths, and is unrelieved by the slightest ray of that imagination which alone can give fascination to the detail of historical events. What hope, prospect, or consideration can have sustained the writer through the composition of these three hundred and odd pages, we cannot imagine. For history, he gives us a catalogue; for poetry, a lay-figure; and for rhythm and melody, a ruptured drum.

The Last of the Czars; or, the Doom of Nicholas. A Romance, founded on Russian History and Traditions. By W. R. Brame. 12mo. London: Partridge & Oakey. 1855.

RUSSIA again! Here we have a work consisting of a series of letters from the unseen world; the first two from the late emperor to his reigning son, and the rest from a spirit who takes the name of Mephistopheles. They are impregnated with the most violent political feeling, though indicating little of political philosophy. In a word, they present in the form of letters the patent history of the life of Nicholas, represent in a pagan form the decision of infernal judges upon his career, and after all leave the reader much as he was before he perused what the writer rather ambitiously calls a 'Romance.' It falls on the mind cold and unimpressive; and unless our judgment is at fault, will soon be forgotten

The Pathology and Treatment of Pulmonary Tuberculosis, and on the Local Medication of Pharyngeal and Laryngeal Diseases frequently mistaken for or associated with Phthisis. By John Hughes Bennett, M.D., F.R.S.E. Edinburgh: Sutherland & Knox.

Of making many books on the subject of consumption there is no end: we wish we could believe that the cures of this formidable malady advanced in the ratio of the books. Dr. Bennett, Professor of the Institutes of Medicine in the Edinburgh University, has given us here a very able work on the subject,—most of the reasoning and facts in which are familiar to those who are familiar with his previous writings. In the year 1841, Dr. Bennett recommended cod-liver oil in consumption, having seen its value in the hospitals in Germany, and, to speak the plain truth, we think the excellent professor has occasionally insisted too much on the merit of the priority of this recommendation. We remember very well, long before his monograph appeared, that cod-liver oil was largely used on the Continent; and, indeed, ourselves followed the steps of a physician in the Bordeaux Hospital, who has since published his experience on the subject, and who had, before the period named, been very largely (and, as he thought, with almost uniform success) using the cod-liver oil in consumption. Professor Bennett has more substantial claims to the respect of his medical brethren than this casual merit of importing, or first writing on, a remedy already universal on the Continent, and which must very soon have become common in Great Britain.

From the examination of upwards of 2000 bodies, Dr. Bennett became impressed with one great fact,—'that all organic diseases occasionally presented a tendency to spontaneous cure. . . . In no organs were such appearances more common than in the lungs, and of no disease was evidence of a spontaneous cure more frequent than of Pulmonary Tuberculosis.' That evidence existed, however, before the introduction of cod-liver oil; and, notwithstanding the enthusiasm of its advocates, the pathological statistics, which are to prove that these cures are more common under cod-liver oil than under any former treatment, have yet to be drawn up. We had seen a few cases of most marvellous recovery from phthisical abscess in the lungs, with all the symptoms of deep 'consumption,' long before the introduction of cod-liver oil; and though we consider it an admirable remedy, we believe the cases of recovery from such conditions are still extremely rare.

We certainly are convinced that consumption is more frequently arrested now than formerly, but this we are disposed to ascribe to the more judicious hygienic treatment, and to the less quantity of drugs with which the unhappy patient is drenched, than to any specific power of any medicine whatever. Still, in good hands, the cod-liver oil is doubtless an invaluable remedy; and that Dr. Bennett's are good hands, and that to him we are indebted for its first advocacy in Scotland, we cheerfully admit.

Medical Reform; being the Sketch of a plan for a National Institute of Medicine. By Azygos. London: Partridge & Oakey.

We have read this pamphlet with much care and pleasure, and are sorry that our space forbids us to enter on the consideration of a social question of such importance to the public as well as to medical men. For twenty years we have taken a deep interest in the subject of Medical Reform, and have watched during that period its progress, if, indeed, that can be called progress which was rather a surging and tumultuous rocking without any advance. We agree with Azygos in repudiating all hope of material benefit from the various plans for medical reform at present before the professional public; and though we cannot coincide with him in all his proposed methods of re-organizing the profession—establishing a grand national institute of medicine, with some hundreds of clerks, scientific commissions, and monopoly of hospitals,—because we think some of the details impolitic, and some impracticable, we can yet conscientiously and earnestly recommend his book to the consideration of medical men, and of all those who wish to see the healing art placed on a sound and honourable basis. The charters of different kings and various governments have divided the practitioners of surgery and medicine into a number of petty republics, with trading companies and directors at their head; and until all these are made to merge in one national medical institute, it will be in vain to hope to see the guardians of the health of the people hold, or deserve, the honourable and useful position which ought eventually to be theirs.

In the sketch of such a medical institute given by Azygos, there is much that is admirable, and much that will bear reconsideration. An able, earnest mind is seen heartily at work throughout. He makes no allusion to the London University, which is beginning the work of which a National Institute of Medicine will assuredly one day be the end. The examinations of that University are as stringent as those Azygos proposes for the licentiates and doctors of his institute, and to the graduates and directors of the Metropolitan University we recommend Azygos to dedicate his second edition, which, we trust and believe, will shortly be required.

It is from no disposition to be hypercritical, but from a sincere respect for the ability and energy displayed, that we beg to hint to the author the propriety of being content with one note of admiration at a time, and of here and there—especially in the notes—lopping off a little redundancy and carelessness of expression, probably the effect of haste.

An Elementary Atlas of History and Geography, from the commencement of the Christian Era to the present time; adapted to the Use of Colleges and Schools. By the Rev. J. S. Brewer, M.A. London: Longman & Co.

This chronological series of maps deserves high commendation. It makes the condition of Europe at various epochs *visible*, and enables the student to trace the changes which have passed over its kingdoms, and the acquisition or loss of territory by its various peoples. It

will greatly facilitate the study, not only of geography but of history. The maps are admirably engraved, and possess several special merits. An able introduction, and concise historical remarks, connecting the different periods illustrated by the maps, add greatly to the value and interest of the work.

Words for the Heart and Life. Discourses by the Rev. A. J. Morris. London: Ward & Co. 1855.

We heartily rejoice to see some of the 'Discourses' of Mr. Morris rescued by the press from at least a partial oblivion, and made accessible to the public at large, who have not the privilege of even occasionally attending his ministry. We hope we are not estimating too highly the good taste of religious society in the present day when we predict that they will receive this book, not indeed with satisfaction—for we think they will 'ask for more' —but with much pleasure and gratitude. In its pages they will acquaint themselves with an original and powerful preacher, whose treatment of the most ordinary themes, and the structure of whose sermons, exhibit a degree of ingenuity which, never making the slightest approach to the fantastic, possess a singular charm. This, combined with profound thought and an almost intuitive insight into spiritual truth, renders his 'Discourses' pre-eminently suggestive and pregnant with instruction. The author's command of language, too, is very remarkable; and he not unfrequently rises to a very high tone of eloquence. There are some preachers—and the reader will perhaps think of Dr. James Hamilton—whose most brilliant passages derive so much of their beauty from classical phraseology and allusion, that they can be fully appreciated only by accomplished scholars like themselves. Mr. Morris is not one of these. While scholars may admire his eloquence, every hearer must feel it in all its force.

The 'Discourses' before us present a very fair specimen of the ministry of Mr. Morris. We warmly commend them to our readers. He who can read the first, entitled 'The Temple Cleansed; or, Christ the Purifier of Religion,' and stop there, may have as many excellences as are compatible with the blankest absence of intellectual taste, but no more.

Popular Astronomy. By François Arago. Translated from the Original, and Edited by Admiral W. H. Smyth, D.C.L., &c., and Robert Grant, Esq., M.A., &c. In Two Volumes. Vol. I. 8vo. pp. 707. London: Longman & Co.

This volume has reached us since our article on Arago has been in print, and we are compelled, therefore, to content ourselves with a simple announcement of its appearance and character. It is the first of two volumes, consisting mainly of the astronomical lectures which M. Arago was in the habit of delivering at the Observatory of Paris during a period of eighteen years. As a lecturer on astronomy, the author 'was at once remarkable for the marvellous clearness of his descriptions, for the vivid and pointed character of his illustrations,

and for the enthusiasm with which he especially dwelt upon all that is more attractive and beautiful in the science.' The lectures delivered by M. Arago underwent, from time to time, a careful revision, so as to keep pace with the rapid progress of astronomy in recent times. It was his firm conviction that the technical language of mathematical science was not needful to a successful teaching of astronomy, and this conviction he has sought to realize in the present work. The second volume is speedily to appear, and will be followed by the 'Biographical Notices' of M. Arago, translated by Professor Rowell.

Villette. By Currer Bell. A New Edition. pp. 492. 6s. London: Smith, Elder, & Co.—We are glad to see a new and cheap edition of this work, uniform with those of 'Jane Eyre' and 'Shirley.' 'Villette,' like its predecessors, bears strong marks of individuality. It is the production of a superior intellect, and will be deemed the more valuable from its author having been withdrawn from us. As we noticed it at some length on its first appearance, in our Journal for March, 1853, we need not say more at present.

Noctes Ambrosianæ. By Professor Wilson. In Four Volumes. Vol. II. Post 8vo. pp. 428. Edinburgh and London: Blackwood & Sons.—The second volume of an edition which was reported on in our October number. It were idle to say anything in praise of the 'Noctes Ambrosianæ.' Our critical judgment has recently been expressed, and need not be repeated. We know few works which combine more happily the elements of amusement and instruction.

An Earnest Ministry, the Want of the Times. By John Angell James. Foolscap 8vo. pp. 263. London: Hamilton, Adams, & Co.—We are glad to see the *sixth* edition of a work breathing an apostolic spirit, and eminently suited to advance the highest interests of mankind. Amongst the many services rendered by Mr. James, the publication of this volume is by no means the least.

Railway Morals and Railway Policy. By Herbert Spencer. pp. 116.—This small volume, forming No. 89 of the 'Travellers' Library,' is reprinted from the 'Edinburgh Review,' with additions and a postscript by the author. It merits an attentive perusal, and will be found both instructive and interesting.

Working Women of the Last Half Century; the Lesson of their Lives. By Clara Lucas Balfour. Fcap. 8vo. pp. 384. London: W. & F. G. Cash.—Mrs. Trimmer, Mrs. Hannah More and her sisters, Mrs. Barbauld, Elizabeth Smith, Charlotte Elizabeth, Mrs. Sherman, Mrs. M. Lundie Duncan, Sarah Martin, Mrs. Ann H. Judson, and Hannah Kilham, are the 'working women' to whose beneficent labors this work is devoted. It were difficult to select a volume better suited to interest an intelligent reader, or to exercise a more salutary influence.

Evidences of the Christian Revelation, and Lectures on Paley's Evidences. By Thomas Chalmers, D.D., LL.D. Post 8vo. pp. 582. Edinburgh: Thomas Constable & Co.—The sixth volume of the select works of Dr. Chalmers—containing his 'Treatise on the Evidences,' his 'Lectures on Paley's Evidences,' and the 'Christian's Defence against Infidelity,' an Introductory Essay to Mr. Collins's collection of Treatises published under that title. We know few volumes better adapted than this to serve the highest interests of mankind, and as such we strongly recommend it.

Nineveh and Persepolis: an Historical Sketch of Ancient Assyria and Persia. With an account of the recent researches in those countries. By W. S. W. Paux, M.A. Fourth Edition. Revised and Enlarged. Post 8vo. pp. 518. London: A. Hall, Virtue, & Co.—We give this new edition of a very valuable work a most cordial reception. The narrative of Assyrian

and Babylonian remains is brought down to the present time. Ample justice is done to the labors of the eminent men who have devoted themselves to this branch of archæology, and the author's official post in the British Museum has enabled him to throw much light on the monuments deposited in that celebrated institution. Our young readers cannot do better than possess themselves of the volume.

EDITORIAL POSTSCRIPT.

THE present number terminates my responsibility as Editor of the 'Eclectic Review.' Both the copyright and the editorship have passed into other hands. The reasons which have induced this course are of a nature so purely personal that it is unnecessary to explain them. I will only say that they involve no diminution of attachment to those principles which have for half a century been advocated in these pages, nor in the 'Eclectic Review' as their consistent exponent. Whatever imperfections may have appeared in the work during the nineteen years of my editorial management, I trust they have not been such as could inflict the slightest injury on the cause of evangelical truth and the interests of civil and religious freedom, which it has ever been the main purpose of this Journal to promote. I am happy to announce, in the words of my successor, 'that the general principles on which the Review will be conducted will remain unaltered.'

The Editorship has devolved on a gentleman whose extensive learning and high character afford the fullest guarantee that a work produced under his superintendence will deserve the confidence of the best and soundest portion of the religious world. While thankfully acknowledging the degree of support which has been extended to my editorial labours, I heartily wish that a much larger measure may be afforded to my successor.

THOMAS PRICE.

Literary Intelligence.

Just Published.

An Inquiry concerning Religion. By George Long.

Agamemnon the King: a Tragedy. From the Greek of Æschylus. By William Blew, M.A.

The Duration of Evil: an Essay.

The Rational Creation: an Inquiry into the Nature and Classification of Rational Creatures, and the Government which God exercises over them. By Rev. J. Brodie.

Greece and the Greeks of the Present Day. By Edmond About.

INDEX.

VOL. X. NEW SERIES.